

The Automobile Club of America.

MOTOR AGE

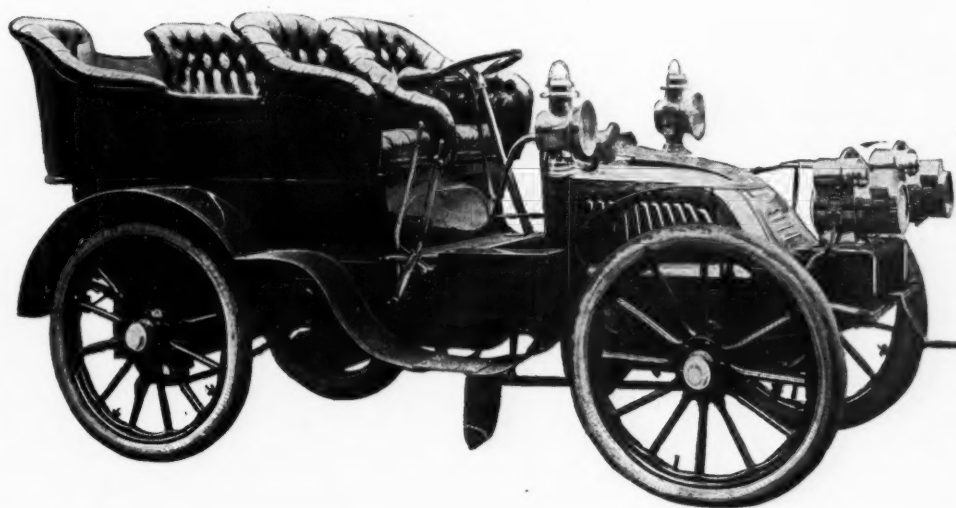
Vol. 3 No. 7

FEBRUARY 12, 1903

Five Cents

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FOR PERFECTION
IN AUTOMOBILE
CONSTRUCTION
of two continents

Highest-class **Automobiles**
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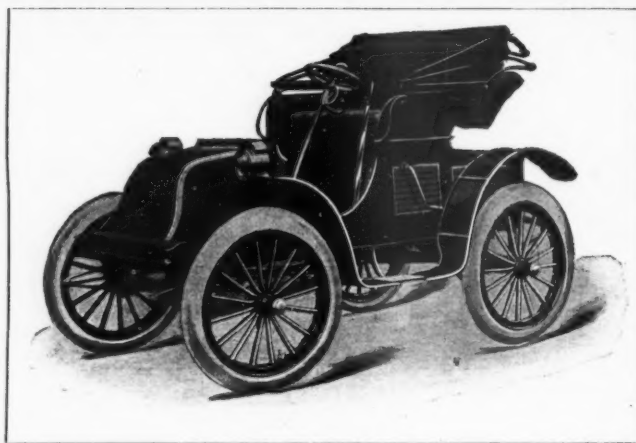
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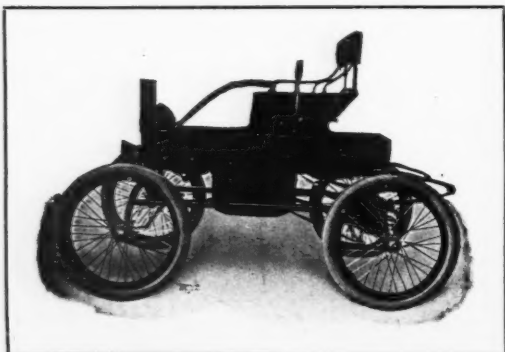
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IF IT'S A BAKER IT'S THE BEST.

The Most Efficient of all Electric Vehicles.



THE LIGHTEST WEIGHT
THE STRONGEST MADE
THE BEST FINISHED



We will send you a Catalogue or we will write you.
Address

The Baker Motor Vehicle Co., Cleveland, O.

MOTOR AGE

VOL. III. NO. 7.

FEBRUARY 12, 1903.

\$2.00 Per Year.

CHICAGO'S MOTOR

The eyes of the trade center on Chicago this week and while the point of focus is the Coliseum, in which the automobile show is held, it is reasonable to suppose that many of the visitors will find interest also in Chicago's automobile trade colony—for Chicago, of all cities in the country, has such a colony. The New York retail establishments are grouped more or less in various vicinities, but not to the extent that the stores are centralized in the western metropolis.

Here is a locality recognized as the automobile headquarters and being but a few steps from the home of the Chicago Automobile Club, is colored with the amateur as well as the trade phases of automobilizing. There are other automobile establishments than those clustering in this vicinity and there are outlying storage stations, but the bulk of the business is transacted here and every month a little prestige is added to automobile row.

HAD A RAPID GROWTH

It has in a short time become the rendezvous of automobilists of Chicago and the mecca of automobilists of the entire central west. The birth of the row and its growth are much like that of the automobile itself. It commenced in a modest way, but has grown very rapidly.

THE PIONEERS

A year ago last fall all automobile retail establishments and agencies in the city were north of Harrison street, most of them being in the vicinity of Jackson boulevard and Wabash avenue. It was desirable to get away from the dirty and congested streets of the



MOTOR AGE

Electric Vehicle Co.

business district, or at least it seemed desirable to a few dealers, so two or three of them put their heads together and a search was begun for a suitable location. The only buildings available were at the corner of Michigan boulevard and Fourteenth street, all the show rooms in which were at that time occupied by other lines of business. By using a little persuasion, and the taking of moderately long-time leases possession of these quarters was given about the first of last year.

The first occupants of the block were the Winton Motor Carriage Co. and Pardee & Co. Soon after, Githens Bros. secured possession of their store, and on the first of May, 1902, the last of the original block of stores was filled by the removal to it of the Milwaukee Automobile Co. from its downtown location.

The next to get into line was the Locomobile Co., for whom a building was erected at the northwest corner of the intersection of the same streets, and as the building was specially built for the company it is exceptionally well adapted to the needs of such an establishment. Then, about the first of June, the Electric Vehicle Co. secured possession of its quarters across the boulevard, and following this

TRADE COLONY

an agency was opened near Thirteenth street to show the Murray motor car.

Such is the first chapter of Chicago's automobile row, and it is now recognized that the policy of bringing the different agencies close together is a good one, and other companies are seeking to join the colony, which at first seemed far away from the business center.

THE LINES REPRESENTED

As to the cars which were shown at the various establishments last year as well as this, mention may be interesting. The Winton company, of course, being a branch house, has never shown anything but its own vehicles, and the business has been so good that Chicago is running a close second to the New York branch.

Pardee & Co. entered the automobile business and their new store at the same time, and the house and vehicles have since commanded the attention of many buyers. The line last year included the Packard, Pierce, Crest and St. Louis cars in the gasoline; the Baker in the electric, and the Foster in the steam line. As in most other agencies, changes have been made in the line for this year, though the Packard and the Baker are still retained. In addition to these, the Yale car is shown, and the American, in the gasoline line; while the Centaur has been added to the electrics.

CHANGES NUMEROUS

Githens Bros. opened their agency with the line of vehicles built by the International Motor Car Co., and added later the Searchmont. With one exception the line this year has been completely changed, the Searchmont alone



MOTOR AGE

Cadillac Automobile Co.



MOTOR AGE

Winton Motor Carriage Co



Ralph Temple & Austrian Co.

having been brought over for the new season. In addition they will this year show the Ods-mobile runabout and touring car, and the Buffalo electric vehicles. A change in the firm was made recently, the copartnership being changed to a corporation, the title now being the Githens Bros. Co.

The failure of the Milwaukee Automobile Co. left the show rooms it had occupied vacant, and last summer the place passed a sort of vicarious existence. With the coming of the new year, however, it was leased to the Ralph Temple & Austrian Co., which has installed therein the Long Distance, the Franklin, and the Toledo touring cars in gasoline machines, the Waverley electrics, and a few Nationals left over from last year's stock.

Across the street, the Electric Vehicle Co. will this year show a line of gasoline machines of the company's own manufacture, in addition to the well-known electric designs.

The Locomobile Co. will, of course, carry a large line of the popular little steam vehicles, as well as some of heavier construction, showing the general improvements in steam construction, and for the first time in the west will present the new line of gasoline cars, and will therefore make a much stronger competitor for business in the row.



'Locomobile Co. of America.

J. A. Barton now occupies the storeroom in which the Murray motor car found a home last season, where he expatiates on the merits of the Shelby motor car, perhaps better known to some as the Darling automobile.



MOTOR AGE

Shelby Motor Car Co.

Across the street from the latter establishment is a new building, occupied by a new company, the Cadillac Automobile Co. of Illinois. The building was constructed for the company, and is connected at the rear with a named.

large barn, which will be used for a repair department and storage room. As may be inferred from the name the company will handle the Cadillac machine in this territory, and has also taken the agency for the F. B. Stearns line of gasoline touring cars. In addition it will also handle the National electrics. The company held an opening Tuesday evening of this week.

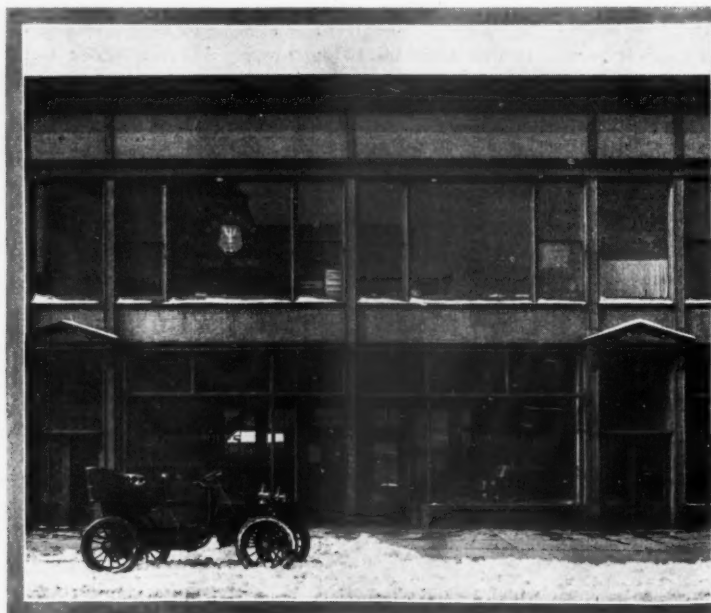
The above companies are already located in the row, and are actively seeking business. All of the establishments have been fitted out with their new spring dresses of calcimine, paint, etc., and are bright and fresh in appearance, which will add to their attractiveness to the visitors during the show week, and in most cases additional room has been secured to accommodate the increasing business.

In addition to those mentioned, the Haynes-Apperson Co. is now at work on a new building, at 1420 Michigan boulevard, a few doors further south than the original row, work having been commenced on Monday of this week. It is expected that the building will be in shape for occupancy within 6 weeks.

The Friedman Automobile Co. will also move to the automobile district this spring, according to report, though the location is not



Githens Bros. Co.



Pardee & Co.

MOTOR AGE

THE DETROIT LOCAL AUTOMOBILE EXHIBITION

Detroit, Mich., Feb. 9—It required not a little of the strenuous in life to get everything ready for the opening of the second annual tri-state automobile and sportsman's show at the Light Guard Armory tonight, but with such hustlers as William E. Metzger and Seneca G. Lewis at the head little is impossible. Very nearly everything was in its place when the first spectator entered the building this evening and the interior was a blaze of light which displayed the good points of the exhibits to advantage.

MANY LINES SHOWN

The general scheme of the floor provides automobiles in the large spaces around the

Northern Mfg. Co., William E. Metzger, John P. Schneider, Baker Motor Vehicle Co., International Motor Car Co., Ide-Sprung-Huber Automobile Co., Kirk Mfg. Co., Peerless Mfg. Co., F. P. Illsley, Elmore Mfg. Co., W. L. Marr, Geneva Automobile Co., White Sewing Machine Co., Jackson Automobile Co., Electric Vehicle Co., Sandusky Automobile Co., Flint Automobile Co., Henry Ford Co., W. H. Weber, Max Dingfelder, Packard Automobile Co., Briscoe Mfg. Co., Chelsea Mfg. Co., Wheeler Mfg. Co., Bloomstrom Motor Co., Diamond, Fisk, Hartford and Goodrich rubber companies, Twentieth Century Mfg. Co., C. A. Strellinger & Co., Veeder Mfg. Co., Badger

rate and the big Toledo car is speaking for itself in the matter of looks among the higher priced ones.

John P. Schneider has the Northern, Elmore, Peerless and the Marr. Schneider was recently made city agent for the Northern and a feature of this exhibit is the rejuvenated runabout in which Maxwell was riding in the automobile race last October when he hit Winton's Bullet and had a providential escape from death. The Marr is a gasoline runabout made here by a company in which Schneider and Marr, who was demonstrator for Schneider last spring, are the principals. It is a clever looking rig, enameled in maroon.



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INTERIOR DETROIT SHOW

walls and under two of the galleries; sporting goods and some automobiles and tires in the center spaces, and a bench show of 250 dogs in the gallery. The north wall is relieved of its barrenness by the skilful hanging of numerous private collections of trophies of the hunt—moose, elk, deer, bear and other stuffed heads, game birds and fish, well mounted, and many skins. These make a very attractive background for the exhibits under them.

THE EXHIBITORS

The complete list of automobiles and their exhibitors, together with other things of interest to the motor trade, is as follows:

Olds Motor Works, Cadillac Automobile Co.,

Brass Co., New Departure Bell Co., P. & F. Corbin, W. L. Marble.

ARRANGEMENT OF DISPLAYS

Starting in on the left, near the entrance, the exhibit of the Oldsmobile is first. "Billy" Rands, now city agent for this factory, is in charge of the big booths, in which show the runabouts with wire and artillery wheels, the new touring car with tonneau, and the physician's coupe.

Next to this the William E. Metzger exhibit starts and it takes in several of the booths. The Cadillac, Waverley, Winton, Columbia, Toledo and Baker are found in all their forms. Mr. Metzger is, of course, talking Cadillac at a rapid

The Geneva steamers come next, including the roadster and the touring car with tonneau. Then at the corner W. H. Weber is showing Ramblers, Orions, Searchmonths and Conrads, a very good display. The White Sewing Machine Co. has its ordinary rig of the 1903 model and the new touring car.

Center spaces are occupied by the Sandusky, Kirk, Chelsea, Flint and Ide-Sprung-Huber automobile companies with the rigs or engines. Max Dingfelder has one of his roadsters there. In the basement the Jackson steam car is being shown.

The rubber tire booths are all neatly decorated and in charge of well known men.

MOTOR AGE

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ARTISTIC ADVERTISING

Some of the display advertisements of the catalogues of the American automobile trade show that the advertisers have awakened to the necessity of more artistic advertising productions than were generally characteristic of the trade during the first two or three years of its commercial activity. The majority of the makers have begun the use of half-tone cuts, made from retouched photographs or wash drawings, instead of those made directly from photographs, and several instances of creditable color work are notable.

The development of the mechanical drawings used in connection with automobile advertising literature has not been equally as rapid, however; for, while some of the makers have sent out booklets or have run advertisements in which well executed line drawings or wax engravings have been employed, it is sad to note occasional instances of the coupling of expensive and artistic half-tone engravings with hurriedly executed mechanical drawings. The automobile trade will be a mechanical trade for a long while to come and the excellence of the mechanical drawings in advertising is just as important as the excellence of the half-tone cuts.

In the matter of decorative art the trade is fortunate in having begun its extensive advertising at a time when all advertisers are employing a high grade of commercial art. In advertising which competes with general advertising of other classes of goods the automobile maker must of necessity meet the grade of his competitors. In class advertising, in which comparative excellence means only competition with advertisers in the same line, he has substantially the same result to attain, and it is not presumable that advertising of a lesser artistic merit will be sufficient in the limited field any more than in the general field.

Thus the automobile advertiser has before him three objects in the presentation of his advertising matter—the grade of his specific half-tone or color illustrations, showing the machines or parts; the grade of the mechani-

cal drawings, showing the construction of the machines or parts, and the grade of the decorative or pictorial illustrations, calling attention to his publicity conversation.

One must not be put under foot in an effort to excel in the others. All are of equal importance. All are valuable in securing business. To get business is the business of advertising, for advertising works itself out, when properly manipulated, by a simple and easily memorized process that may be summarized in four words—attraction, attention, conviction, cash. The reader of the advertising medium, whether it be a periodical or a booklet, must be attracted to its perusal—by well executed decorative embellishment or striking typography; his attention must be held to the subject matter—by well made mechanical illustrations or cleverly conceived wording; he must be convinced that the article advertised is the article to buy—by a clear and indisputable treatment of the subject; then he places his order, which completes the cycle of operations.

Automobile row in Chicago has brought one thing to the attention of many agents and manufacturers throughout the country which was not deemed feasible nor advisable prior to its start—the advantages to be derived from bringing the different agencies close together. The result in Chicago is that buyers go from one establishment to another, at each place gaining new ideas and accumulating enthusiasm to such an extent that they are very likely to make up their minds at once that they should be the owners of automobiles. It is also probable that they make much more intelligent selections than if the same number of visits were made in a more desultory way. This has been proven in Chicago, and if close association on the same lines is tried extensively in other cities it will doubtless yield the same practical benefits.

LOCAL SHOWS GALORE

Hardly had the automobile trade become a full fledged trade in reality, and hardly had the first automobile exhibition of any kind been given, when enterprising promoters in middle sized cities began talking local shows. Of course, these have been managed under the pseudonym of national shows, but in reality they can be termed correctly by no other name than local.

But despite the early start of the local movement and of the effort of the National Association of Automobile Manufacturers to starve it to death while still young, this season brings out an unprecedented number of local shows in reality and an almost alarming number of proposals of the holding of others. Cleveland has had its show and Detroit holds its exhibition this week. Now for March are scheduled shows at Philadelphia, Buffalo, Boston, Washington and Indianapolis, in turn. Dealers or private parties in other and smaller towns are also projecting automobile shows, and it is probable that the total will be augmented considerably before the exhibition season closes.

What does this popularity of shows mean to the trade?

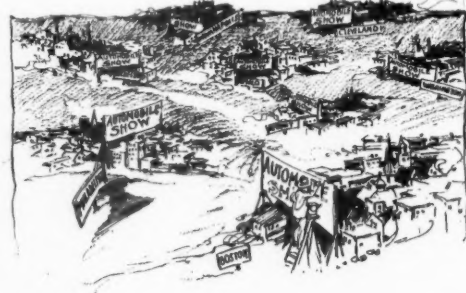
If they were local shows their benefit to the trade would be as great in effect as it seems casually, with reference to the selling success of the Cleveland and Detroit shows. But the danger of the shows comes in the fact that many of the local dealers who help to

organize the shows and who wish to exhibit at them place, or try to place, the financial burden of so doing upon the manufacturers for whom they are agents.

The manufacturers may derive indirect profit from these shows in that they increase the sales of their agents, but the shows are so numerous that the makers cannot expect to support them all, and by supporting only a part of them they discriminate in favor of some of their several agents.

It is further clear that the maker who disposes of the bulk of his output early in the season and at the two large national shows in New York and Chicago, and in so disposing of them sells a large share of the vehicles to local dealers, and then goes down into the country to help those dealers sell the same machines to the individual purchasers, is unnecessarily kind and in reality selling each car twice over to get rid of it.

As local shows these smaller exhibits have a usefulness, but it is only equitable to suppose that the dealers should bear the burden of the expense. It is no more just to ask the maker to pay for or share in the paying for the local show, than it is to expect him



after having, by wide advertising, secured and maintained a national reputation for his product, to then go deeper into his advertising fund and pay for the advertisements of the local dealers in their local papers.

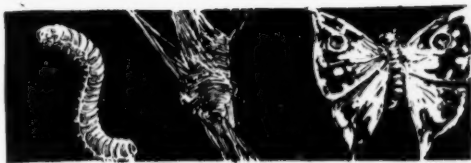
A remarkable thing in journalism is the strong effort being made by a few horse publications to break into the automobile field—as a sort of a side line. Until the business had gained its present importance these papers did all possible to prejudice the use of automobiles. Now that there seems a likelihood that they will be serious competitors of the horse—and in the near future, too—the journals are willing to espouse their cause. The reason for this change of heart can probably be traced directly to the pocketbook.

A TRANSITION PERIOD

The automobile trade is just now in one of the most peculiar stages of its existence. Not merely that it is a stage of development, but also on account of the fact that rapid development is accompanied by a commercial status of the product which renders the automobile generally and widely useful, even for more sedate purposes than that of being up-to-date. While the automobile was in the primitive state, the situation was simply one of mechanical effort. The whole thought of those engaged in automobile experiment and building was closely centered upon the mechanical tasks at hand. But the trade has gradually but rapidly grown to a state in which there are more considerations to be faced than at any previous or future time.

Automobiles are not perfect. But they are near enough to perfection to be practically





useful. They are no longer the expensive toys of the rich nor the unreliable tokens of the effort of a genius. They are rational commercial propositions. The public knows this and extends its pocketbook toward the maker. The maker has sufficient confidence in his products to send them out over the country and the world to do the work for which they are sold.

Yet the automobile is far from being of the kind that it will eventually be. Even the most positive in the trade refrain from assertions as to the eventual form, style of power, etc., of the more or less standardized motor car. While the development has reached a stage of practical utility, it has not slackened its pace. It is this continuance of the mechanical effort at a time when the commercial possibilities are unlimited and the fields of commercial usefulness just beginning to be opened, that complicates the affairs of the trade. The public adds to the many phases of the situation with convulsive efforts to class automobiles at a time when the automobile is making rapid strides toward working itself out of classification into the rank of universalism.

From every corner of human effort and experience comes daily some adaptation of a new or old automobile situation. The time is chock full of situations. There is little settled—except bills—and much to be determined. The maker stands as a natural confrere with all the different elements of automobilism, which, on account of the rapid spread of automobilism, must sooner or later mean all of the different elements of society, both in business and pleasure.

The trade cannot wait until the relations of society and the automobile are settled before its own problems are cared for, nor can it drop the consideration of the other situations in a concentrated effort to develop to the furthest limit the products of its shops. The maker must still be mechanic, business man, club man, racing man, general booster, legal expert and patron of all automobile functions. His attention is divided into many channels. His efforts cannot be centered upon any one line of effort.

Just as much to his eventual interest is the building of good roads as the building of good automobiles. Just as much to his interest is the decision of numerous legal problems as the decision of his next year's prices. Truly the trade is in a transition period in which nothing is settled and in which impressions are fleeting and finalities impossible.

THE TWO SHOWS

The automobile show in Madison Square Garden, New York, last month was the greatest ever held in this country and was excelled only by the Paris show of Christmas-time in general magnificence, size and attendance. Will the Chicago show be as great? Will it be greater? These are natural questions on the eve of the second of two record breaking events in the history of the American automobile trade.

The Chicago show will hardly surpass the New York event in the matter of attendance. Chicago as a city, while of great importance in automobilism, has not reached the degree

of interest that has New York; nor have the daily papers of the western metropolis taken as kindly to automobile affairs as those of New York. There is not in Chicago so large a number of people who turn out regularly on general principles to such events as shows. Chicago is not such an entertainment center as New York. Its people do not to the same extent live on the streets and at the places of entertainment. It can hardly be expected, then, that that part of the attendance which is made up of mere entertainment seekers and those who attend simply for the sake of being on hand will be as large as at the eastern show.

With the business element—those who come to study and to buy automobiles, however, the case is different. It is expected that the total of sales will reach or exceed that of the New York event. This supposition is reasonable. Chicago itself has numerous buyers who are awaiting the show as the most fitting time to order automobiles, while it is the natural business center of a great territory which has within the past year taken on a marvelous interest in automobilism.

Not only will established dealers who come to secure new or renew old agencies be on hand, but a great number of prospective dealers from the smaller cities and towns in which automobiles have not previously been handled will appear to make their formal debut in the trade. In addition to these, individual buyers from the scores and scores of neighboring cities and towns which, by reason of good railroad advantages, are almost suburban, will be seen at the show. The success of the show from a sales standpoint is assured.

The Chicago Automobile Club has undertaken to assist in bringing out a goodly number of local prospective purchasers and it is possible that while the floating population of the show may not be record breaking, the number of those actually interested in automobiles will equal that of the former show.

In the matter of the exhibition itself compared with the eastern one little need be said to place it on par in one respect and above par in another. The list of exhibitors shows that the display will be as large and as representative of the preceding display, while the more roomy interior of the Coliseum main hall and the close conjunction of the annex on the same floor insures a more striking exhibit when viewed as a unit. The Coliseum also presents a more spectacular interior of itself and this, when well decorated and lighted, cannot help but lend an unsurpassed illumination to the show picture.

The interest of the trade in the exhibition is no less than that taken in the other show. The manufacturers are wide awake to the possibilities of the show as a selling medium and are making every effort to render their share of the work of making the exhibition satisfactory to the visitor.

Testimony regarding the good work of automobiles is always pleasant to record. Two Chicago physicians last year purchased cars,

expecting to partially discontinue using horses in attending to their medical practice. One of these gentlemen had previously kept three horses and the other four. In both cases all the horses have been disposed of, the automobiles giving better and much quicker service to these two busy men. Such testimony is the most convincing kind—more convincing than that of users of strictly pleasure carriages.

One of the pleasant things to record about Chicago, which is so beset with hints of legislation adverse to automobilists, and is afflicted with one or two newspapers which seem to feel that automobile owners are pre-convicted criminals, is the courtesy extended by the city officials to visiting chauffeurs during the week of the show. All operators, for whom the show management is willing to vouch, will be loaned license tags, without expense. The mayor's courtesy is appreciated by those who have the exhibition in charge.

The Pacific coast is fast becoming one of the most important automobilism territories of the country. It has long since been one of the most important cycling territories. As a coast automobile dealer expressed it recently, the westerners believe in spending fully one-half of their time enjoying life.

The A. A. A. has undertaken the task of revising the racing rules in this country. It is impossible to discuss the contemplated changes, for they will not be made public until after their final adoption. Each club in the association will be consulted confidentially in advance of any decision.

The lot of a trade journal representative during show time is not especially pleasant. Inside the show he is besieged with requests for all manner of accommodations in the way of "write-ups," and outside the show his friends tackle him on every corner for free tickets to the show.

Has the American automobile passed foreign competition, and do American makers now lead the world in the construction of practical American road cars? A thorough inspection of the various vehicles at the Chicago show will do much to answer these questions.

A late London novelty in feminine automobile wear is a leather sunbonnet. Its popularity will probably be limited. Pretty women might look well in them, for a pretty woman is pretty anywhere; but how about the plain members of the sex?

Wonder if the trade will have to travel on the high speed gear during the snow? If not enough power is available to keep up the pace, perhaps tickling the carburetor might help out a little.

But let us remember in our enthusiasm that the trade and the sport are both young, very young, and that the future is to be much greater than the present.

This year's automobile productions are no longer horseless carriages. The latter are things of bygone days. The real automobile has arrived.

When will the show issues of the eastern papers reach the show?



A PRIVATE TRIAL IS FAVORED

It Is Probable that A. C. A. Race Committee Will Select International Cup Team Members by Secret Tests

New York, Feb. 8—It is a fair inference from the replies of Secretary Butler, of the Automobile Club of America to a MOTOR AGE man's close questioning after the meeting of the racing committee last Tuesday, that the trials, to which the candidates for places on the American international cup team will be subjected, will be private ones presumably over the public roads. The well known policy of the club against any transgression of speed laws alone stands in the way of the probability of such a solution of the problem.

NO IMMEDIATE DECISION

Mr. Butler admitted that there was small probability of there being any announcement of the character of the tests before the candidates presented themselves to the committee in this city on April 11. This was followed by a positive assertion that the committee had in its mind a plan for tests and was by no means up in the air on the subject. Now if these trials were to be public ones on a track or under conditions admitting of their publicity it would be unfair to the contestants and a natural public interest to make a secret of their character. If such be not the case then it is certainly bad policy not to give a full free chance for criticism before the trials so that when they are completed there may be no aftermath of dissatisfaction, which discussion and possible amendment beforehand might have avoided.

It is rumored that the committee may ask the rejected candidates to cross the ocean as alternates. Such conduct on their part would assuredly be a most patriotic and sportsmanlike act and would provide against the chances of this country being deprived of one or more representatives through accidents during the preliminary practice. Preliminary practice abroad, too, might give a chance for a better selection than our more stringent speed laws would allow. Consent to such an eleventh hour change in the team would be patriotism and sportsmanship indeed. A wild guess might be that the committee hopes to induce all the candidates to cross the ocean and leave the selection of the team to follow road trials and races on the other side.

EMBARRASSING FOR WINTON

It cannot be denied that there are some mutterings of discontent among the candidates that Mr. Winton was selected without being submitted to trial along with the rest. The argument is that the committee should have thrown sentiment to the winds and sought only a team, which preliminary trials had proved the best. Mr. Winton is left in the embarrassing position of being obliged to

"make good." It has been suggested that he might relieve himself from this embarrassment and at the same time be credited with a most sportsmanlike and patriotic act should he insist in being a competitor in the preliminary trials and take his chances with the rest.

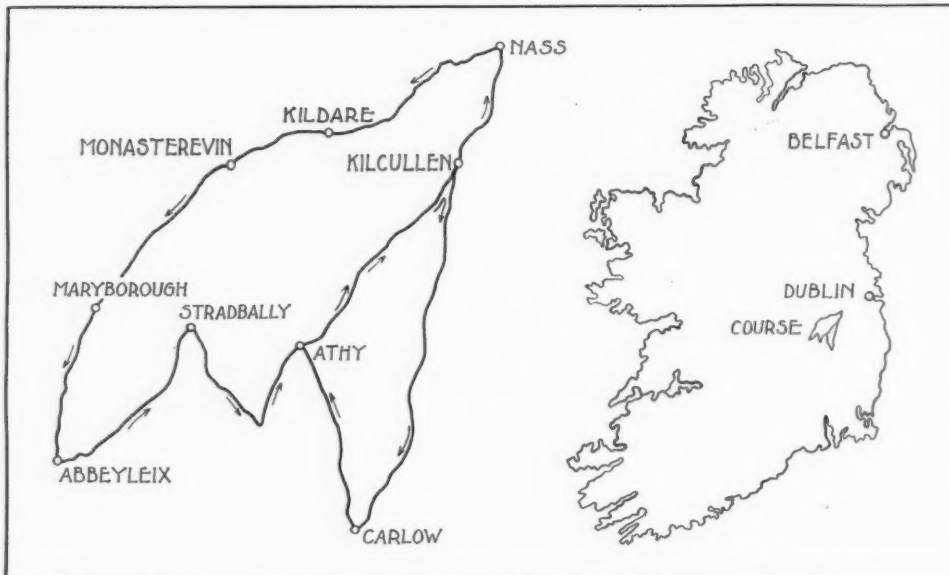
EUROPEAN TESTS

It is probable that the committee would not find it hard to persuade all the candidates to cross the ocean and leave the selection of the team to follow trials on European roads or competition in foreign races; for all the candidates outside of the two Winton drivers have already announced their intention to take part in the Paris-Madrid race whether chosen members of the team or not.

RACE ON JULY 9

The occasion of the calling of the meeting of the racing committee, at which Messrs. Scott, Whipple and Morris were all present, was the receipt of a letter and cable from the Automobile Club of Great Britain. The latter inquired whether July 9 would be a satisfactory date, to which an affirmative reply was cabled.

Mr. Solomons, chairman of the A. C. G. B. I. foreign relations committee, who wrote



PROPOSED GORDON-BENNETT CUP RACE COURSE

the letter, said that in the event of consent to the Irish race not being obtainable the British club had recourse to the offer of the Automobile Club of France to make the contest a part of the Paris-Madrid race on May 24, but thought the early date would be inconvenient to the Americans as well as themselves. There was also an offer from the Automobile Club of Belgium to run the race over the Ardennes circuit in July.

The A. C. A. replied favoring a race on British soil, to which Edge's victory entitled his club. It is inferred that the cable asking whether July 9 would be convenient referred to a race in Ireland and not in Belgium, and that progress was being made toward gaining consent to an Irish race, as had Belgium been referred to it would have probably been specified in the cable.

It certainly seems to the advantage of America to stand by England in her fight to keep the privileges of running the race on British soil. The United States is not overly blessed with road routes suitable for such a race and should the next contest be brought here by our winning this one we may find ourselves in a similar predicament.

SELECTED CUP RACE COURSE

Details of Irish Route Which Has Been Selected by British Club for Gordon Bennett International Contest

While the long discussion concerning the possibility of holding the Gordon-Bennett international cup race on British soil has not been settled, nor the demands of the French clubmen that it be run on French soil lessened, prominent members of the Automobile Club of Great Britain and Ireland have, after careful investigation, settled upon a course which is deemed by all of them to be suitable. The main end now to be attained by the Britons is the legalization of the contest by parliament. It is said in this connection that all of the Irish authorities favor the contest, believing that it would be of benefit to the island.

ROUTE DESCRIBED

The route selected is shown in the illustration, which also shows the geographical position of the course in Ireland.

The complete circuit is 131 miles, this to be run over three times. It starts from the little town of Naas, situated 20 miles from Dublin.

It then runs southwest over a wide and good but rather winding road to Newbridge—6½ miles. From Newbridge the road continues wide to the Curragh. From this it is narrow, but dead straight, into the town of Kildare—12 miles. From Kildare to Monasterevin—18½ miles—the road is straight and good, but rather narrow. From Monasterevin to Maryborough—31½ miles—the road is straight and wide, and the surface good. From Maryborough to Abbeyleix—41 miles—the same characterization applies. At

Abbeyleix the course turns northeast through Ballyrowan to Stradbally—52½ miles—over a comparatively straight and good road. From Stradbally it turns southeast. For about 3 miles the road is wide and good. For 3 miles after that it is rather narrow. Here there is a sharp turn to the left, and the village of Ballylinan is passed through, into Athy—66½ miles. This stretch of road is wide and straight, but the surface is rough on account of the heavy traffic between Athy and Castlecomer. From Athy to the fork near Old Kilcullen—78 miles—is the best stretch on the entire route. Except for one curve at Ardsull, it is dead straight, and the surface is excellent. At Old Kilcullen the cars will have to wheel sharp to the right, and follow the main Carlow road through Timolin and Castledermot into the outskirts of the town of Carlow—99 miles. This road is comparatively straight, and the surface is fair, and in most places there is room for two cars to pass. Just on the outskirts of Carlow the road bends sharply to the right, and runs in a northwest direction, opposite the river Barrow, into the town of Athy—111 miles. It is a pretty good level

road. From Athy to Old Killeen the excellent 11½ miles stretch of road already described will be passed over again, thence a sharp double curve leads over the Liffey at Killeen, and the course follows a fairly good road into the town of Naas, thus completing the 131 miles circuit.

GOOD FOR SPECTATORS

There are many convenient places on the course from which the race can be viewed, and it will be possible to watch the contest on different roads where there are convenient short cuts. It will be seen from the map that many such cuts should be possible.

WILL DISCUSS MANY BILLS

American Road Makers Meet at Detroit to Plan Support of Good Roads Measures!

Detroit, Mich., Feb. 9.—The international conference on good roads, to be held in connection with the annual meeting of the American Road Makers at Detroit, Mich., February 13 and 14, bids fair to be an important meeting. Several governors, besides Governor Bliss, of Michigan, have accepted invitations to be present and take part in the discussion of the important measures to be brought before the conference. Several hundred delegates have been appointed by about a score of governors, and it is expected that every state in the union will be represented. A score of congressmen and senators have accepted the invitation to be present.

The programme has been completed. The interstate highway bill, the Brownlow bill, the latter now before congress, the convict labor, state aid and state instruction bills, are all questions of prime importance which will be thoroughly discussed by the leading officials and representatives of the various states, together with distinguished good roads advocates in the United States and from the Dominion of Canada.

There have been many expressions from congressmen and senators favoring the project, but who will be unavoidably detained at Washington on the date of the meeting.

The American Road Makers' Association is a unique organization of its kind as it is the only one having a limited and paid membership. There can be but ten members from each state. The membership is limited so as to provide for equal representation of every state and territory and at the same time prevent any possible dominance of the organization by any one section of the country in the future. Because of the limitation, it costs something to join and something to maintain a membership. Amendments to the constitution will be submitted at the Detroit meeting providing for state auxiliary associations in order to admit the hundreds of good roads advocates who have been clamoring for admission. In this way the national organization will be enabled to call to its aid a large number of influential good road advocates.

FARMERS AND STEEL ROADS

During a session of the Farmers' Institute held recently at Freeport, Ill., R. P. Scott delivered an address on steel roads. He discussed the merits of the roads as determined by actual tests that have been made, and then urged upon the farmers the fact that the installation of such roads by them would so increase the revenue of farming and the value of their farms that the roads might be said to have not only cost them nothing but to have been furnished free with a bonus.



M. J. BUDLONG

Ten years ago a dealer in bicycles, on a limited scale, in a small town in Illinois; today, president of the National Association of Automobile Manufacturers, the representative of a young but gigantic industry. Such is the record of Milton J. Budlong, who was elected to the presidency at last week's meeting. Mr. Budlong was formerly a resident of Rockford, Ill., and there, as a very young man, he secured the agency for the Columbia bicycle. He did so well that he was offered, and accepted, a position as traveling salesman, and while in this position came into personal contact with George H. Day, then vice-president of the Pope Mfg. Co., whose subsequent advice and assistance has been invaluable to him. After a while Budlong was made manager of the company's Chicago branch, his next step being to the management of the western business of the Electric Vehicle Co. Finally he was called to Hartford, his election to the vice-presidency being an event of comparatively recent occurrence. George H. Day, president, and M. J. Budlong, vice-president, have two qualities in common which unquestionably are responsible for the ties between them, which are of more than a mere commercial character. Each combines splendid ability with so pleasing a personality as to make him a favorite with everyone on short acquaintance. Their business dealings are invariably pleasant. There are some men who possess the happy faculty of saying "No" in such manner as to be as pleasing as the average man's "Yes." These are two of the men. Budlong is one of the youngest members of the executive committee of the N. A. A. M. He has no enemies and though an easterner by force of circumstances remains a western man at heart. Just such a man was needed to overcome the feeling that the east had monopolized the offices of the association. He is a believer in the maintenance of the headquarters in New York but in all other respects sympathizes with the wishes of western men and recognizes the importance of the industry in the central states. Budlong is always accessible. It will probably be his policy to make the members feel, more fully than they have ever done, the association's need of their co-operation and that the interests of one and all are to be respected.

MOTORING IN JAMAICA

H. T. Eisenberg, of Chicago, has just returned from the island of Jamaica and relates some interesting automobile experiences. He made one run from Kingston to Newcastle over the military road. The run is a hard

climb of 12 miles, 4,000 feet being ascended in this distance. Mr. Eisenberg made the run with a friend, in a Locomobile runabout, in 4 hours. Another trip was afterward made to Port Antonio from Jamaica in 4 hours, being a little less than the railroad running time between these points.

Mr. Eisenberg states that the car created a great deal of excitement on the island, but that so far as business is concerned there are few people who have money to invest in automobiles. Most of the army officers live well up to their incomes. The roads on the island are good, although there are many curves which render high speed impossible.

BEER TOWN IS ALARMED

State Legislation of a Rigorous Nature Arouses Milwaukee Automobilists to Concerted Action

Assemblyman Moldenhauer, of Wisconsin, has invited trouble for himself by introducing a bill in the legislature that seeks to regulate the operation of automobiles. Milwaukee automobilists are furious and are getting ready to move down on Madison, and when they do, Mr. Moldenhauer will find his hands full.

Among other things, the bill provides that automobilists must display their initials in 3-inch letters on the backs of their machines. They will also have to file with the secretary of state their names and addresses, pay a registration fee of \$1 each, carry two lamps, and whenever the driver of a horse, goat or other domestic animal finds that his quadruped is frightened by the approach of the vehicle, the driver thereof will be obliged to stop whenever the hand of the other driver is held up. The bill being aimed especially at automobilists, every automobile owner in Milwaukee was thrown in a frenzy of excitement when he learned of this new attack upon his privileges.

WAS IT NUMBERED?

At Nuremberg, Germany, in 1649, there was put upon the road a self-propelling vehicle which caused a vast sensation. This fearful and wonderful carriage, the work of the celebrated mechanic, Johann Hautsch, was of highly ornate design, with a ferocious-looking dragon in front, and an angel on either side. The vehicle was "worked by two men concealed in the interior, who turned the rear axle by means of winch handles and a train of gearing." It was a complete success, at all events, on the streets of the town. It went up and down hills, was steered round corners and stopped and started as desired. It was adapted for carrying several passengers, and the dragon in front was contrived to spout out a stream of water for the purpose of clearing the way in a crowd. This same dragon in Hautsch's car could also turn its eyes to and fro with great rapidity, and if the water and the eyes did not frighten people out of the way, the angels, mounted on each side of the carriage, were made to sound their trumpets.

HORSEMEN CAUSE TROUBLE

Last Monday Chicago daily papers contained long accounts of the arrest of J. E. Fry, an automobilist, for causing a runaway and serious damage to a number of cutters while driving his automobile on the streets. He was accused of running at a high rate of speed, and after the accident seeking to escape, only yielding to arrest at the point of a revolver in the hands of a policeman. But the driver of the horse has made a statement to the effect that

Fry was not traveling more than 5 miles an hour, that he had taken his horse, which was known to be a dangerous and vicious animal, to the side of the street, where he was brought to a complete stop to allow the automobile to pass; that the horse reared and plunged, breaking the thills of the cutter, dragging the driver over the front and into the snow, when he broke away, causing a number of other accidents and considerable damage.

Mr. Fry did not try to escape, but after stopping to see what the damage was, went on his way, and after going some three blocks his companion said that some one was following them. The automobile was then stopped, and after coming to a stand a policeman appeared, and at the request of Mr. Ryan, who claims ownership of the dangerous horse,

arrested the chauffeur and took him to the police station.

Dispatches from "Senator" Morgan announce his arrival at Ormonde, Fla., and progress in the promotion of the proposed record trials and speed contests on the beach at that place in March. J. P. Beckwith, of Jacksonville, has offered a \$500 trophy for one of the races to be known as the East Coast cup. The beach is being surveyed and measured off into various distances from 1 to 25 miles. A good roads association at Jacksonville is also proposed.

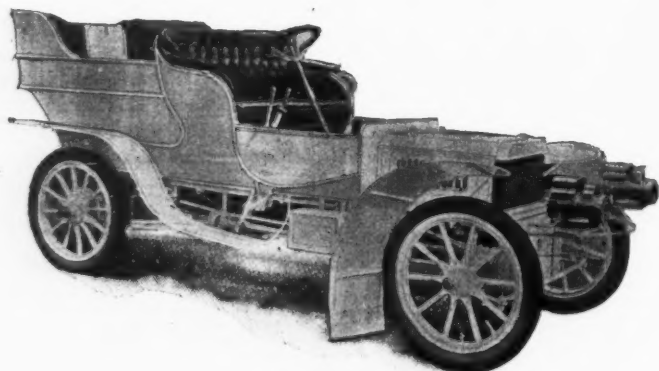
An English road expert has created a novel road which is said to be permanently free from both dust and mud. It is made from ordinary iron slag, which is saturated with tar

while still hot from the furnace. The tar thoroughly impregnates the slag and effects a great reduction in water absorption. The water absorption of ordinary slag after 48 hours of submersion is 3.14 gallons, while the absorption after having been treated with tar is but .307 gallons per ton. A stretch of road of this new material is now being made. A short length has been in use for 4 years and seems to stand hard service well.

Rambler automobiles are described in one of the truly handsome kind of catalogues. It is a credit to Thomas B. Jeffery & Co., of Kenosha, Wis.

Cleveland is the heart of the game all right—but Cleveland is a youngster in the matter of association politics.

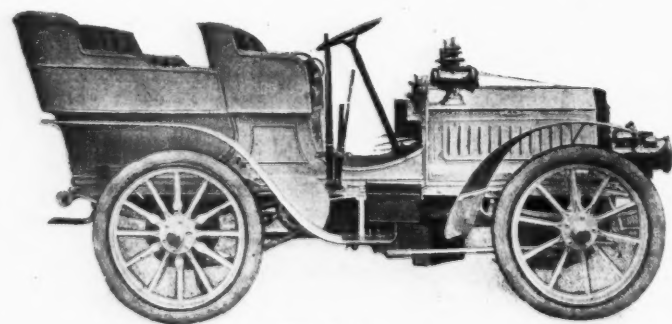
AUTOMOBILES DISPLAYED
AT THE STANLEY SHOW,
LONDON, ENGLAND



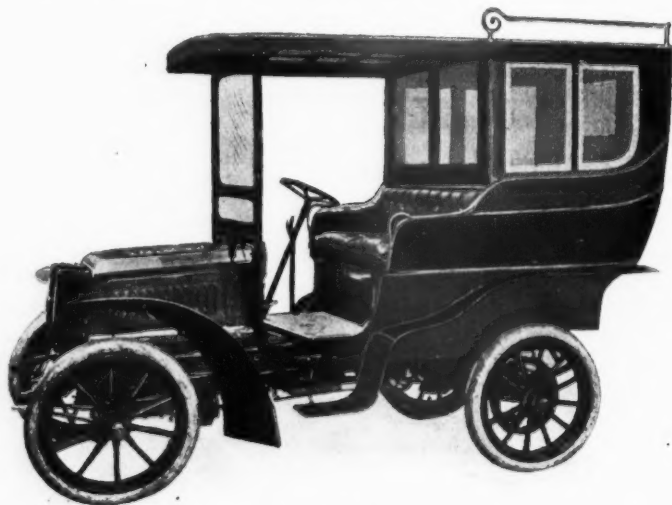
The Velox



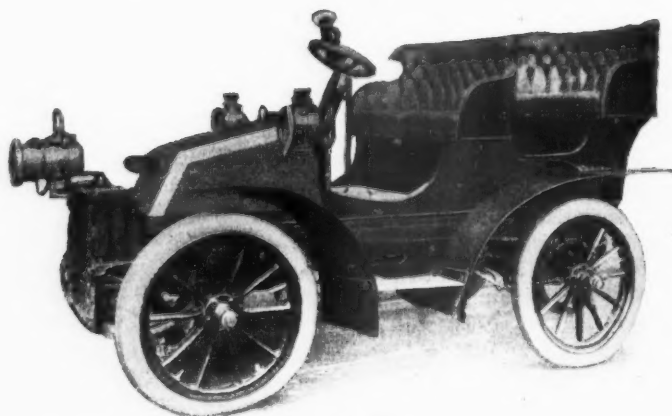
The Rochet



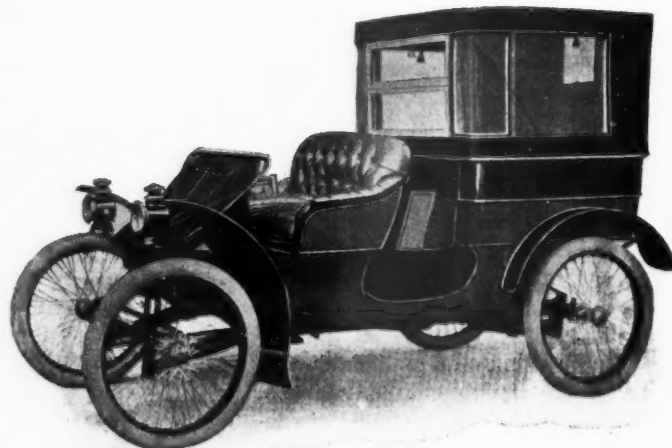
The Germain



The Pipe



The Miesse



The Air Cooled Lancaster

CHICAGO GREETES THE AUTOMOBILE TRADE

The second annual Chicago automobile exhibition, when its doors are thrown open to the public next Saturday afternoon, will present a spectacle greater in brilliancy and general effect than was presented by the recent New York show, and which will be the greatest spectacle known to American automobilism. The number of exhibitors is substantially the same as at the eastern show, but the building in which the exhibition is held—the Chicago Coliseum—is better suited to show purposes than is Madison Square Garden, of New York.

EXHIBITS NOT DIVIDED

Instead of the handsome displays of vehicles being divided into three distinct apartments, practically all of the show will be within range of the eye at one glance. While many of the exhibits are in the annex, this is on the same floor with and opens directly into the main Coliseum, so that the entire exhibition is a unit.

All of the 25,000 square feet of floor space has been sold and by the time this issue of *MOTOR AGE* is in the hands of its readers many of the exhibits will have been laid out, an earnest endeavor being made to get the whole show in readiness by 2 o'clock on the afternoon of Saturday. This is made possible by concessions on the part of the Coliseum company and by the fact that many of the exhibits are already in Chicago, a large number of the displays at the New York show having been shipped through on the special freight train which was engaged by the secretary of the National Association of Automobile Manufacturers.

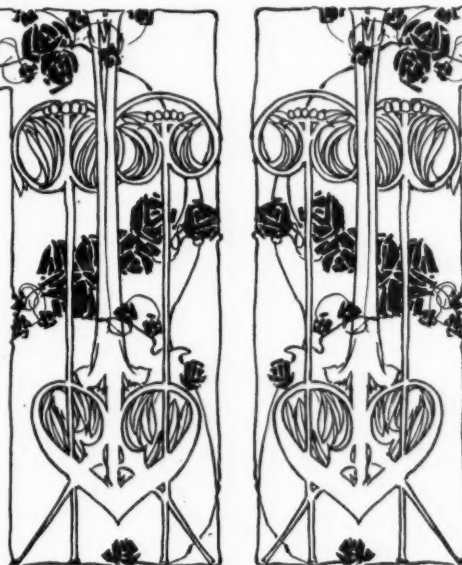
PLENTY OF AISLE ROOM

In the general system of layout the show will be similar to the eastern show, the ruling of the maker's association that there be no railings holding good here as well as in New York. The aisle space will be greater, however, which means that there will be less congestion during crowded periods. Inspection of the cars displayed will be easier and exhibitors will have better opportunities for uninterrupted conversation with prospective purchasers.

The exhibits will be equally representative of the trade as were those at the eastern show. While several of the well known and smaller makers who showed at New York will not be present, their loss is more than balanced by the addition of western makers who did not exhibit at the preceding show. There will not be so many French cars on exhibition, but the total of vehicles displayed will be as large if not larger.

PRESS WORK ENCOURAGING.

The daily press is doing more generous work than at preceding western shows in advertising the event, and while they may not duplicate New York's 200 columns of reading matter relative to the show, it is probable that they will give the show creditable reports. The treatment of automobile matter has already been a matter of secondary consideration with the Chicago newspapers, but seemingly this year the publications have awakened to the



great importance of the automobile in the affairs of Chicago and to the prominence of the Chicago show in matters automobilism.

Every indication points toward the arousing of considerable local interest, while as at previous Chicago shows the attendance of a large out-of-town contingency is assured. The attendance of dealers who come to actually buy has always been a strong feature of Chicago shows, both in the automobile trade and as far back as the flourishing days of the bicycle exhibitions.

The Chicago Automobile Club will actively engage in helping to make the show a success. The directorate of the club has constituted itself a reception committee to welcome visitors, while several club functions of more or less important natures will relieve the trade phase of the week's activity.

INFORMAL INSPECTION

On Friday evening prior to the formal opening of the show the club will entertain the local press. The members have volunteered their personal cars for the purpose of taking the managing and city editors and business managers of the various papers to the Coli-

seum, where they will be afforded a private inspection of the exhibits then in place.

On the following Monday evening the same course will be pursued with the Chicago city council judiciary committee, but with a different although similar end in view. The club handling the matter of local legislation has always aimed to secure rational measures by the inductive method—that is, it has sought to point out to the local lawmakers the importance of the automobile and the generally safe and careful manner in which it is operated on the streets. By bringing the councilmen to the show, the greatness of the automobile and of the industry may be pictured graphically to them and their good will and co-operation won to a greater extent than by the diametral method of opposition on general principles.

GOOD ROADS MASS MEETING

Then, the club will co-operate with the National Association of Automobile Manufacturers and the good roads organizations in the organization of the monster good roads mass meeting to be held in the Chicago Auditorium Friday night of show week. The plans for this meeting are being rapidly formulated and it is expected that the joint efforts of the club and other parties interested will result both in a large attendance and in a well filled program of speakers of national repute. All of the most important good roads workers have been invited, as well as the governors of the various states and mayors of several cities. During the two days prior to the mass meeting the goods roads project in general and the convention in particular will be discussed at various gatherings at the show, thus tending to make the exhibition a historical mark in automobilism and automobilism interests as well as in the automobile trade and its interests.

SMOKER FOR VISITORS

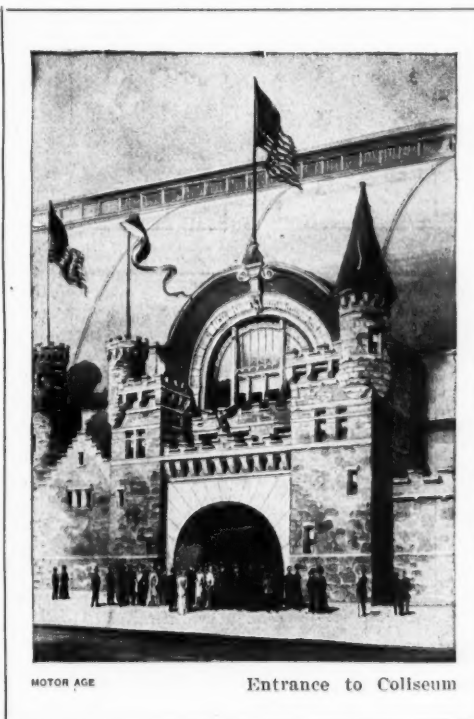
During the entire continuance of the show the club will maintain headquarters in the Coliseum.

While the details of all of the entertainments of the show week have not been completed it is certain that there will be several affairs of interest besides those mentioned. Struck to a lighter key will be an informal smoker and vaudeville entertainment, given by the management of the show to the visitors. This will occur at the Coliseum Thursday evening.

The complete list of exhibitors at the show, together with the ground floor plan of the Coliseum showing the location of the different spaces, is presented elsewhere in this issue.

EARLY IN SHAPE

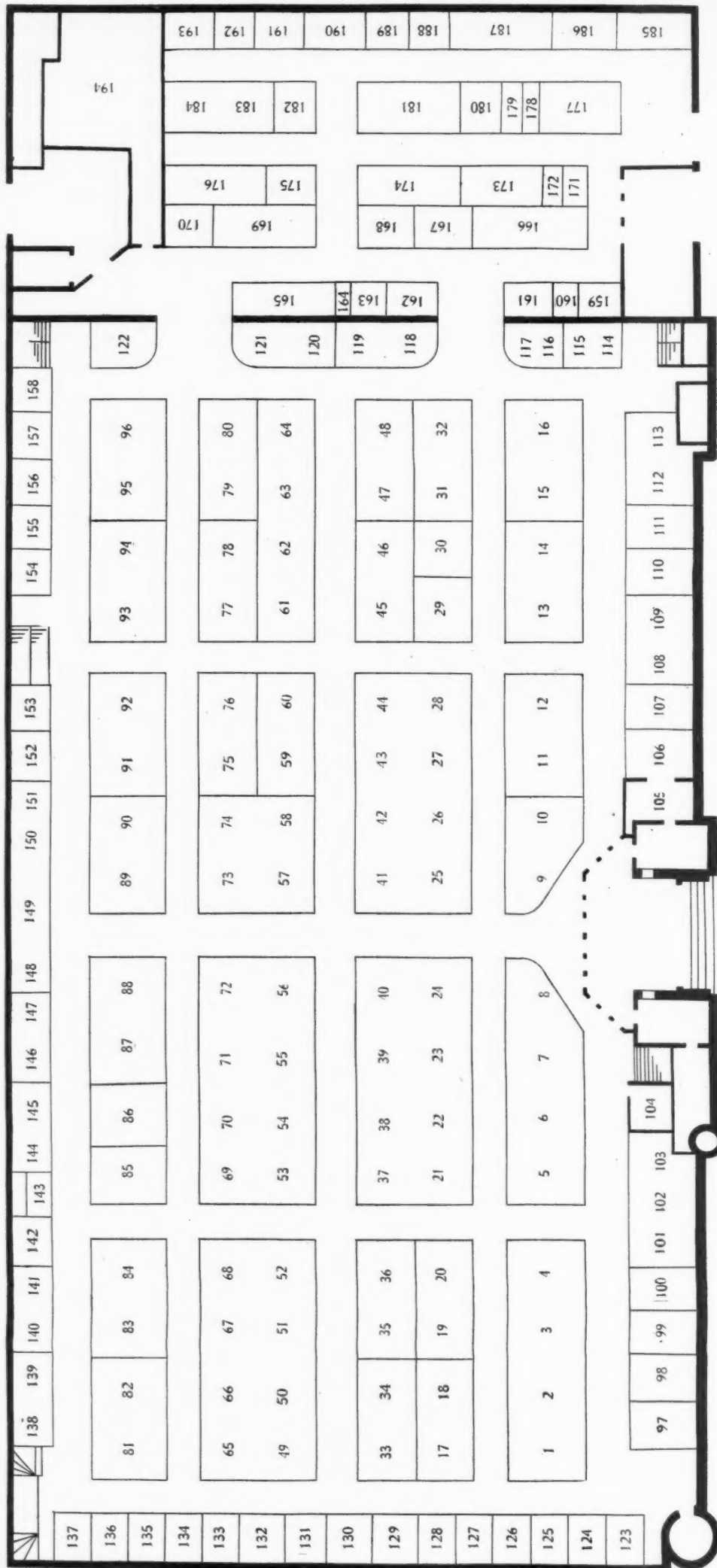
The show will be record breaking in one respect. Instead of opening Saturday evening it opens at 2 o'clock in the afternoon. Yet there is every likelihood that despite this early opening hour the show will be nearer complete when turned over to the public than have been previous exhibitions. As early as Thursday several of the displays were in place and a large number of the signs and all of the building decorations hung.



MOTOR AGE

Entrance to Coliseum

FLOOR PLAN OF THE SECOND ANNUAL CHICAGO AUTOMOBILE SHOW AT THE COLISEUM FEBRUARY 14 TO 21



COMPLETE ALPHABETICAL LIST OF EXHIBITORS GIVING THEIR RESPECTIVE SPACE NUMBERS IS ON OPPOSITE PAGE

EXHIBITORS AT THE CHICAGO SHOW

American Gasoline Motor Co., 88 W. Jackson Boul., Chicago.....	164	Knox Automobile Co., Springfield, Mass.....	45, 46
American Motor Carriage Co., Cleveland, Ohio.....	5, 6, 7, 8	Lindsay Automobile Parts Co., Indianapolis, Ind.....	33, 34
American Roller Bearing Co., Boston, Mass.....	146, 147	Libal, Joseph, 1070 Clifton Park Ave., Chicago.....	174
American Darracq Automobile Co., 652 Hudson St., New York,	183, 184	Lozier Motor Works, Plattsburg, N. Y.....	187
Apperson Bros. Automobile Co., Kokomo, Ind.....	31, 32	Locomobile Co. of America, 7 East 42nd St., New York.....	25, 26, 27, 28
Auburn Automobile Co., Auburn, Ind.....	97	Locomobile Co. of America, 7 East 42nd St., New York.....	41, 42, 43, 44
Aurora Automatic Machinery Co., Aurora, Ill.....	94	Marble-Swift Auto Co., 330 Wabash Ave., Chicago.....	99
Autocar Co., Ardmore, Pa.....	83, 84	Matheson Motor Car Co., Grand Rapids, Mich.....	95, 96
Badger Brass Mfg. Co., Kenosha, Wis.....	142	Mead Cycle Co., 12th St. & Wabash Ave., Chicago.....	173
Baldwin Chain Mfg. Co., Worcester, Mass.....	146, 147	Merkel Mfg. Co., Layton Park, Milwaukee, Wis.....	154
Bartholomew Co., Peoria, Ill.....	166	Midgley Mfg. Co., Columbus, O.....	146, 147
Barton Boiler Co., 4243 State St., Chicago.....	159	Motsinger Device Mfg. Co., Pendleton, Ind.....	190
Brandenburg Bros. & Alliger, 93 Lake St., Chicago.....	93, 94	Motor Development Co., 370 Wabash Ave., Chicago.....	157
Brecht Automobile Co., St. Louis Mo.....	152	Muncie Wheel & Jobbing Co., Muncie, Ind.....	158
Brennan Mfg. Co., Syracuse, N. Y.....	135	McCanna, John F. Co., 244 Wells St., Chicago.....	163
Briscoe Mfg. Co., Detroit, Mich.....	137	National Automobile & Motor Co., Oshkosh, Wis.....	93, 94
Brown-Lipe Gear Co., Syracuse, N. Y.....	146, 147	National Carbon Co., Cleveland, O.....	155
Buffalo Electric Vehicle Co., Buffalo, N. Y.....	186	National Motor Vehicle Co., Indianapolis, Ind.....	89, 90
Cadillac Automobile Co., Detroit, Mich.....	91, 92	Northern Mfg. Co., Detroit, Mich.....	82
Champion Mfg. Co., Brooklyn, N. Y.....	148, 149, 150, 151	Office.....	105
Centaur Motor Vehicle Co., Buffalo, N. Y.....	5, 6, 7, 8	Olds Motor Works, Detroit, Mich.....	57, 58
Chelsea Mfg. Co., Chelsea, Mich.....	111	Olds Motor Works, Detroit, Mich.....	73, 74
Cleveland Automobile Co., Cleveland, O.....	61, 62, 63, 64	Packard Motor Car Co., Warren, O.....	5, 6, 7, 8
Cleveland-Canton Sping Co., Canton, O.....	146, 147	Pardee & Co., 1412 Michigan Ave., Chicago.....	5, 6, 7, 8
Crest Mfg. Co., Cambridge, Mass.....	110	Peerless Motor Car Co., Cleveland, O.....	15, 16
Chicago Motor Cycle Co., 107 Madison St., Chicago.....	169	Peterson, Franklin K., 165 Lake St., Chicago.....	146, 147
Chicago Storage Battery Co., L406 Fisher Bldg., Chicago.....	176	Prescott Automobile Co., 83 Chambers St., New York.....	79, 80
Conrad Motor Carriage Co., Buffalo, N. Y.....	112, 113	Pierce, Geo. N. Co., Buffalo, N. Y.....	11, 12
Columbus Motor Vehicle Co., Columbus, O.....	118, 119	Pittsburg Reduction Co., Pittsburg, Pa.....	107
Cryder, Henry C., New York, N. Y.....	75, 76	Pope-Robinson Co., Hyde Park, Mass.....	165
Dasey, P. J. Co., 19 La Salle St., Chicago.....	148, 149, 150, 151	Porter Storage Battery Co., 1025 Monadnock Bldg., Chicago.....	161
Dayton Electrical Mfg. Co., Dayton, O.....	143, 149, 150, 151	Public Telephone.....	104
DeDion-Bouton Co., Paris, France.....	116, 117	Racine Boat Mfg. Co., Racine, Wis.....	185
Diamond Rubber Co., Akron, O.....	153	Rose Mfg. Co., Philadelphia, Pa.....	131
Dietz, R. E. Co., 53 Laight St., New York.....	136	Russell, C. W., Springfield, O.....	180
Dixon, Joseph, Crucible Co., Jersey City, N. J.....	130	St. Louis Motor Carriage Co., St. Louis, Mo.....	170
Dow Portable Electric Co., Boston, Mass.....	148, 149, 150, 151	Salamandrine Boiler Co., 220 Broadway, New York.....	148, 149, 150, 151
Duryea Power Co., Waterloo, Iowa.....	174	Sandusky Automobile Co., Sandusky, O.....	191
Electric Contract Co., 53 Maiden Lane, New York.....	122	Searchmont Automobile Co., Philadelphia, Pa.....	181
Electric Storage Battery Co., Philadelphia, Pa.....	123	Shelby Motor Car Co., Shelby, O.....	85
Electric Vehicle Co., Hartford, Conn.....	37, 38, 39, 40	Shelby Steel Tube Co., Pittsburg, Pa.....	125
Electric Vehicle Co., Hartford, Conn.....	21, 22, 23, 24	Smith & Mabley, 513 Seventh Ave., New York.....	49, 50, 51, 52
Elmore Mfg. Co., Clyde, O.....	47, 48	Speedwell Automobile Co., Milwaukee, Wis.....	162
Fanning Mfg. Co., Pratt & Morgan Sts., Chicago.....	30	Standard Anti-Friction Equipment Co., 50 Broadway, New York.....	172
Franklin, H. H. Mfg. Co., Syracuse, N. Y.....	49, 50, 51, 52	Standard Carriage Lamp Co., 43 S. Canal St., Chicago.....	178
Fredonia Mfg. Co., Youngstown, O.....	35, 36	Standard Motor Vehicle Co., 183 La Salle St., Chicago.....	49, 50, 51, 52
Friedman Automobile Co., 3 Van Buren St., Chicago.....	77, 78	Standard Welding Co., Cleveland, O.....	128
Firestone Tire & Rubber Co., 550 Wabash Ave., Chicago.....	126	Stearns, F. B. Co., Cleveland, O.....	9, 10
Flint Automobile Co., Flint, Mich.....	167	Stevens, J. Arms & Tool Co., Chicopee Falls, Mass.....	86
Fisher, Carl, Indianapolis, Ind.....	143	Studebaker Bros. Mfg. Co., South Bend, Ind.....	13, 14
Fisk Rubber Co., Chicopee Falls, Mass.....	134	20th Century Mfg. Co., 17 Warren St., New York.....	133
Funke, A. H., 325 Broadway, New York.....	192	Temple, Ralph & Austrian Co., 293 Wabash Ave., Chicago,	49, 50, 51, 52, 65, 66, 67, 68
Gray & Davis, Amesbury, Mass.....	129	Tennant, Irwin, Springfield, O.....	179
General Automobile & Mfg. Co., Cleveland, O.....	17, 18	Thomas, E. R. Motor Co., Buffalo, N. Y.....	19, 20
G. & J. Tire Co., Indianapolis, Ind.....	144, 145	Tichner, T. L., 358 Dearborn St., Chicago.....	168
Goodyear Tire & Rubber Co., Akron, O.....	101, 102, 103	Timken Roller Bearing Co., Canton, O.....	132
Goodrich, B. F. Co., Akron, O.....	140, 141	Trebert, H. L. F., & Co., Rochester, N. Y.....	94
Grant, Louis M., Chicago, Ill.....	116, 117	Veeder Mfg. Co., Hartford, Conn.....	124
Haynes-Apperson Co., Kokomo, Ind.....	59, 60	Union Automobile Co., Union City, Ind.....	175
Hartford Rubber Works Co., Hartford, Conn.....	106	U. S. Long Distance Automobile Co., 62 W. 43rd St., New York,	49, 50, 51, 52
Hoffman Automobile Mfg. Co., Cleveland, O.....	138, 139	Wagner Cycle Co., St. Paul, Minn.....	171
Hoffman Motor Co., 30 W. Randolph St., Chicago.....	143	Warner Differential Gear Co., Muncie, Ind.....	158
Hyatt Roller Bearing Co., Harrison, N. J.....	122	Waterloo Gasoline Engine Co., Waterloo, Iowa.....	174
Illsley, Frank P., 290 Wabash Ave., Chicago.....	83, 84	Westerfield Motor Co., Anderson, Ind.....	188
International Motor Car Co., Toledo, O.....	53, 54, 55, 56	Western Motor Co., Logansport, Ind.....	148, 149, 150, 151
International Motor Car Co., Toledo, O.....	69, 70, 71, 72	Western Storage Battery Co., Indianapolis, Ind.....	193
Imperial Wheel Works, Flint, Mich.....	167	Westinghouse Co.'s Publishing Dept., Pittsburg, Pa.....	156
Jeffry, Thomas B. & Co., Kenosha, Wis.....	87, 88	Whitney Mfg. Co., Hartford, Conn.....	127
Johns-Manville Co., 100 William St., New York.....	160	Wick, H. B. & Co., Youngstown, O.....	177
Jackson Automobile Co., Jackson, Mich.....	108, 109	Willis, E. J., 23 Park Row, New York.....	189
Jones-Corbin Co., 304 N. Broad St., Philadelphia, Pa.....	120, 121	Winton Motor Carriage Co., Cleveland, O.....	1, 2, 3, 4
Kammann Mfg. Co., 240 W. Lake St., Chicago.....	182	Wisconsin Wheel Works, Racine Junction, Wis.....	101, 102, 103
Kirk Mfg. Co., Toledo, O.....	100	Woods Motor Vehicle Co., 110 20th St., Chicago.....	17, 18
Konigslow, Otto, Cleveland, O.....	146, 147		

THE READERS' CLEARING HOUSE

HIGH SPEED MOTOR

New Haven, Conn.—Editor *MOTOR AGE*—I noticed in *MOTOR AGE* of January 15 an article on what was claimed to be an exceptionally high speed, two-cycle engine, having 750 feet per minute piston travel. I wish to say that I designed and built a 4 by 4½-inch engine recently that would make 1,450 revolutions per minute without a miss or break. This engine is built without a valve except an ordinary Lunkheimer mixing valve, and the sparking mechanism is located in the cylinder head, which is water jacketed. I use a deflector to direct the incoming charges upward. The cylinder head is spherical in shape—a perfect half sphere. By this shape I get a practically pure mixture and perfect combustion.

I consider this design in all respect preferable to the one shown, as it is much more simple and equally reliable. I use a very small crank case and balanced disks. These were cast with half of each cored out to give the proper balance, and with the print holes plugged afterward. The fly wheel is 14 inches in diameter and weighs 85 pounds. The crank shaft and pin are 1½ inches in diameter and are cast into the disks.—C. W. FOSTER.

RECHARGING MAGNETS

New York, N. Y.—Editor *MOTOR AGE*—I have a Holtzer-Cabot magneto used in sparking a 6-horsepower gasoline motor. The armature and bearings were taken off for cleaning, and the magnets found to be demagnetized. The armature, commutator, brushes and springs appear to be in good condition. Kindly let me know how I can recharge the magnets and if I can do it with the aid of a dynamo used on a 110-volt circuit, and what voltage would be best to employ; or had I better return the machine to the makers?—W. H. TAYLOR.

The magnets may be charged from the pole pieces of a dynamo, but it would be the better plan to return the magnets to the makers to be put into working shape.

MOTOR PROPORTIONS

Aurora, Ill.—Editor *MOTOR AGE*—About what horsepower would a four-cylinder, air-cooled motor of 2½-inch bore and 2½-inch stroke be? How heavy should the fly wheel be? How many carburetors or mixing valves should be used?—A READER.

Such a motor would develop about 5 to 6 horsepower at 1,500 to 1,800 revolutions per minute. The fly wheel should be 10 inches in diameter, the rim to weigh about 20 pounds. Only one mixing valve or carburetor is necessary.

THE AMPERE-HOUR

Indianapolis, Ind.—Editor *MOTOR AGE*—What is meant by the term ampere-hour, used in connection with batteries, and especially with regard to storage batteries?—M. S.

An ampere-hour is the quantity of electricity supposed to be flowing in a closed electric circuit, having a resistance of one ohm, and an electromotive force or pressure of one volt. For example—a storage battery has an electro-

motive force of 22 volts and a capacity of ten ampere-hours; how long will it operate a 22-volt, one-half-ampere lamp. Two volts multiplied by 10 ampere-hours will give 20 Watts capacity for the battery, and 2 volts multiplied by one-half of an ampere gives one Watt capacity for the lamp. Consequently, dividing the battery capacity in Watts, by the Watt capacity of the lamp, gives 20 hours as the length of time that the battery will run the lamp. An induction coil which takes 5 amperes current on a closed circuit, has its contact cam circuit closed for one-fifth of a revolution; how long will a three-cell 6-volt, 10-ampere-hour storage battery operate this coil? One-fifth of a revolution will give one ampere for the coil, and the battery has 6 volts multiplied by 10 ampere-hours or 60 Watt-hours. Therefore the battery will operate the coil for 60 hours.

OPPOSED CYLINDER DESIGN

Columbus, O.—Editor *MOTOR AGE*—In regard to the opposed cylinder motor designed by Mr. Roseboro, of Cleveland, O., and illustrated in *MOTOR AGE* last week, may I ask you a question? The connecting rods are placed at one side of the center of the piston. This in the absence of means to prevent it would put a very destructive twisting strain on the connecting rod bearings. What kind of a guide is employed to preserve the alignment in this respect?—S. M. HOWELL.

Opposed cylinder motors of this type are in common use for automobiles and no bad results have attended this particular construction as far as can be ascertained.

DEFECTIVE IGNITION

Bridgeport, Conn.—Editor *MOTOR AGE*—The gasoline motor of my automobile fires regularly when the ignition mechanism is retarded, but when fully advanced the motor will not fire at all, and when partially advanced fires irregularly. Can you kindly tell me the cause of this trouble, and how to remedy it.—S. F. L.

The cause is most probably due to weak or run-down batteries. Test with a new set of cells. If the trouble is not then overcome, it may be due to defective insulation of the spark plug; or the platinum points may be either too far apart or corroded. Take the spark plug apart and examine it closely, and clean the platinum points thoroughly and set 1-32 of an inch apart.

HORSE POWER RATINGS

Chicago, Ill.—Editor *MOTOR AGE*—We see continually in the automobile journals inquiries from puzzled intending purchasers concerning the actual power of the motors of automobiles. There are many instances of two manufacturers using the same size of motor with one claiming nearly double the power of the other. One manufacturer claiming high power for a small motor stated that he secured the power he claimed because his motor was better built and had higher compression. Another using the same size motor and claiming much less power stated that he claimed

what he knew to be right and the high power claimant was "gulling the public." After careful investigation I agreed with the low power claimant. Concerning compression, it is a mere matter of construction and all motors can be given equally high compression.

High power from a small motor means that it is being run at a ruinously high speed which will very soon place it "hors de combat." With due consideration for efficiency and durability, no gasoline motor should be run faster than 600 lineal feet of piston speed per minute and the following calculations are made upon this basis.

All engineers are conversant with the well known rule for computing the horsepower of an engine, which is

$$\frac{P \times S \times M}{33,000} = H. P.$$

in which P=area of the piston in square inches; S=piston speed in feet per minute and M=mean effective pressure in pounds per square inch.

Taking as a standard a two-cylinder motor of 5-inch bore by 6-inch stroke, we have the following:

$$P=19.63 \text{ square inches;}$$

$$S=600 \text{ and } M=16.5;$$

Then

$$\frac{19.63 \times 600 \times 16.5}{33,000} = 11.78 \text{ horsepower}$$

Several manufacturers using motors of this size claim 12 horsepower, which is very nearly correct according to the above rule, and of course a single cylinder motor of the same dimensions would give half the power or 6 horsepower.

The mean effective pressure of 16.5 pounds to the square inch is rather high for gasoline motors and in the light of experiments made by manufacturers of gas and gasoline motors, 12.5 pounds would probably be more nearly correct; but, giving the manufacturers of automobiles the "benefit of the doubt," 16.5 pounds has been adopted in calculating the foregoing example.

The horsepower ratings of gasoline motors for automobiles should be standardized and this subject could be taken up by the National Association of Automobile Manufacturers with great profit to all concerned, more especially to the intending purchaser and the honest manufacturer. Manufacturers who tell prospective buyers that a gasoline motor can be run as rapidly as an electric motor, have not, apparently, the slightest idea of the difference between a reciprocating engine and a rotary motor.—A. S. M. E.

ROOM FOR ARGUMENT

Reading, Pa.—Editor *MOTOR AGE*—Your editorial on one-lever control has been read with much interest and I thank you for it. If the public will but think of the comparative merits of the two systems they will find out which is the best; the fittest will survive—this is all for which I am striving. But I wish to call attention to several points in your argument. You began by stating that the one-hand proposition is on the face of it attractive—"It looks simple." I say it is simple. You fail, however, to give credit for this fact.

A complicated vehicle with large mechanism and many operations to perform cannot successfully be controlled by a single lever. This controlling device is applicable only to a simple vehicle and if a vehicle can be reduced to a degree of simplicity that will per-

mit one-hand control, it is the most desirable device yet used. A six-in-hand team requires a half-dozen lines to handle it, but a saddle horse may be controlled perfectly by a single rein in a single hand. No one denies this and no one will assert for a moment that the six lines of the tally-ho team can be handled with greater certainty or with less danger or confusion than the single rein of the saddle horse. It goes without saying; likewise the one-lever control.

To drive a gasoline motor vehicle three functions are necessary—steering, throttling and gear changing. To stop, a brake is required—but more of this later. You omit steering but include throttling, spark changing, speed changing, clutch manipulation and brake, which classification does not meet actual conditions. The throttle is the accepted way to vary the speed under ordinary conditions. It is admitted that spark changing should be done by a governor—for life is too short to be spent in altering the position of the spark by hand with each variation in the speed. Speed changing is effected by the clutches in modern systems, although many foreign ones use the sliding gear arrangement; with a clutch in addition, while the brake is a stopping device and not a function of driving. From this it is seen that your assumption of five functions in a single handle is incorrect.

That decreasing the number of controlling movements increases the amount of mental effort necessary, I deny. A given amount of effort is necessary to produce a given result, whether this result is attained by a single lever moved in two different directions or by two different levers each moved in a predetermined direction. There is a gain, however,

in the fact that in one case the operating hand is always on the handle, while in the other case the hand must be shifted from one lever to the other. This change requires time and muscular effort, although the thought required is practically no more than that required to operate a single lever in two directions. The only thing necessary in connection with the single lever is that the motions shall be absolutely different so that they may not be any more readily confused than if on different levers. At first thought it may be assumed that this condition cannot be secured, but when the mechanism is so simple that three functions only need be performed by a single lever this difference in direction of movement for each function is easily secured. For example, Duryea vehicles are steered by sidewise motion of the lever, the most natural steering method known. The fish and the muskrat steer by this method. The Indian's canoe, the ordinary boat tiller and nearly all the lighter motor vehicles use this method. If a vehicle is so heavy or so badly designed that sufficient power cannot be secured from a lever steering some other form becomes necessary just as six pair of lines are used on the tally-ho team, but never on a saddle horse.

Twisting the handle of this same lever throttles the motor, a most natural movement, for everybody knows how to twist a valve to shut off power and no one can possibly confuse twisting a valve with swinging a lever, even though the same hand be employed to do both and although one handle suffices for both. It has been found by actual practice that 95 per cent of driving with a high powered vehicle is done without changing the gears, so that when the high clutch is once set it is frequently unnecessary to release it for a half day at a time. Admitting this fact one-hand control narrows down to two functions only and surely no objections can be raised to this. Gear changing, however, is effected by depressing the handle for low gear and raising it for high gear—also two natural positions. The intermediate position leaves the motor free.

The handling of a device of this kind not only requires less mental effort, but less physical effort, as comparison, by actual usage, of the two systems will show. With two or more separate levers it becomes necessary to look to see which one is grasped, with the possibility of grasping the wrong one, particularly in the dark or under a lap robe. A number of automobiles are built with two levers identically alike, side by side or around a common center, with nothing to indicate, except by sight which is the proper one. If this is not a confusing arrangement, what is? With one-hand control no chance for such confusion exists. The lever is always in position, one hand—sometimes both—is always on it and thought of action is accompanied by action, no time being wasted in

disengaging a hand from something else and grasping the proper lever. Not only may a "clear-headed, thoughtful man" operate it perfectly but children take to it readily.

The chart you so kindly mention has never been needed, for only three movements control perfectly.

Two holders to a single pen, two handles to a table fork, two door knobs on each side of each door, two rudders to a boat and similar useless and disadvantageous arrangements are on a par with multiple controlling levers where a single one will do the work better. The tendency of other manufacturers to drop their seven to fifteen different levers in favor of a less number, together with a tendency to group this less number around the steering column, simply shows which way the wind is blowing and proves the superiority of one-hand control.—C. E. DURYEA.

Without wishing to disparage Mr. Duryea's pet system of control, MOTOR AGE still wishes to call attention to a few inconsistencies in Mr. Duryea's argument. To simplify the system of control by reducing the number of power plant elements to be controlled is certainly good policy—but this differs from the policy of taking a given number of elements of control and grouping them on one lever or handle. The tally-ho team may be used here, also, as an illustration. The single rein of the one horse does not combine the functions of the six reins of the six-horse team. Five horses are cut out. Mr. Duryea, while he prefers to drive one horse with a single rein, would hardly take upon himself the responsibility of driving six horses with a single rein, even though that rein were capable of a number of different movements. Neither is it presumable that, while he prefers only one handle to his fountain pen and only one handle to his fork, he would care to have the same handle serve for his fountain pen and for his jack knife, and the same handle for his fork, soup spoon and meat knife; nor that, while wishing only one knob on each side of a door and only one rudder on his boat, he would care to have the door knob combined with the hinges or the boat rudder combined with the main sheet.

TWO-CYCLE MOTOR SIZES

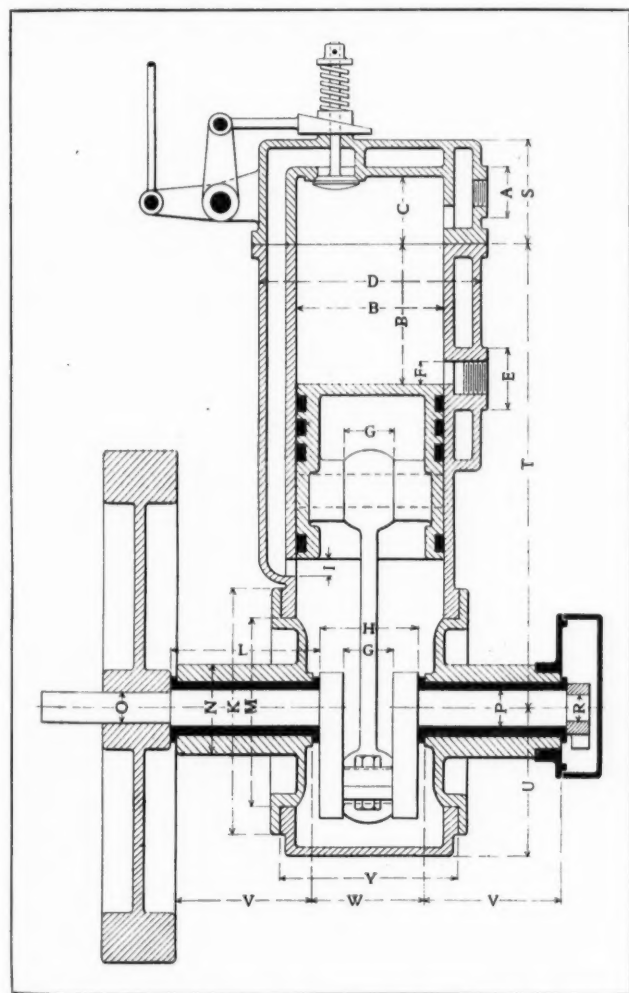
Akron, O.—Editor MOTOR AGE—Like many others I have come to MOTOR AGE for information. I would like to build a gasoline motor and the one that you describe in the issue of January 15 I have selected as a model. Is there any particular size for the admission port that goes to the cylinder head, and is there any object in increasing the compression in the crank case as much as possible? Can I get the dimensions of a 4 by 4-inch motor of that type?—H. H. S.

A drawing and table giving the general dimensions of the two-cycle motor described in MOTOR AGE are given. The inlet valve open-

A	B	C	D	E	F	G	H	I	K	L
1½	4	1½	7	2½	½	1½	¾	¾	8	4

M	N	O	P	R	S	T	U	V	W	Y
4	3¼	1½	1¼	¾	3	16	5	3½	3¾	5

ing should be 1½ inches diameter, and the port or passage from 2½ to 3 inches wide. The exhaust port should be 3½ to 4 inches wide or have a total area of at least 1½ square inches. Increasing the compression in the crank chamber increases the velocity of the fresh mixture passing into the cylinder, giving a fuller



MOTOR AGE

Two-Cycle Motor Sizes

charge, higher compression, a more complete expulsion of the burned gases, and consequently higher speed and greater power.

RELAY TOUR GROWTH

Boston, Mass.—Editor MOTOR AGE—I have read with much pleasure in your issue of January 29 J. Fred Probst's welcome to our motor cycle relay tour. It is certainly good to hear from the "old timers" like Mr. Probst. We sincerely hope that the motor cycle will resurrect a large number of them, and we think it will. This is one of the reasons why we planned this tour and it is already having a good effect. We are more than pleased to see what an interest is already manifest.

Five states are already represented by members to make up our party. As one of our Boston papers stated, we should not be surprised if at least 1,000 motor cyclists took part in this tour, for some distance of the trip. Some are already booked for the entire distance. A large number from the New England states will go as far as Niagara Falls, to take in the day's outing we have planned.

An appropriate badge is being made. These will be sent to members as fast as their applications are received with the \$1 membership fee. It is for the good of the tour and sport that these be worn on every appropriate occasion during the entire season until the finish of the tour, as it will help to make the motor cycle popular and better known. Mr. Probst may rest assured that we shall plan to enjoy the western hospitality he so kindly extends to our party, when we reach his city.—E. H. CORSON.

A RIGID STATE LAW

Reading, Pa.—Editor MOTOR AGE—We wish to call attention through your columns to a good roads bill that has been or is about to be introduced at this session of the legislature of the state of Pennsylvania, having been prepared by Arthur Kirk, of Sharpsburg, Pa. This bill was before the house of representatives in 1901 but was not passed for some reason. Whether the next attempt will be more successful is, of course, not known. While the bill as a whole is probably a good one so far as it applies to good roads, it contains a slap at automobile users that is unquestionably unfair and uncalled for, and this section should be stricken out or amended before the

bill is passed. It is section 38 and provides that "Every owner or user of an inanimate motive power propelled road traveling vehicle shall annually pay to his or her county treasurer—except makers—\$20, on or before the first day of April of each year, or \$3 per month for any fraction of a year. For which he or she shall be given a licensed figured plate by his county engineer, which must be conspicuously attached on the left side of the vehicle, so that its number can be easily read while the vehicle is in motion, and if the above license fee is not paid before the tenth day of each year 50 cents for each month or fraction of a month, the above license fee, with cost of collection and all penalty for non-payment of license shall be paid to the informer who made information that license for that year has not been paid."—C. E. DURYEA, First Vice President, American Motor League.

OIL IN FUEL TANK

Chicago, Ill.—Editor MOTOR AGE—I noticed in a recent issue of MOTOR AGE an article regarding the mixture of lubricating oil and gasoline to be used in motor bicycles. As I am at present testing some machines, I used the opportunity to experiment along the lines referred to, and after carefully observing the given proportions of the mixture, was unable to get a single impulse from the engine. The oil was bought for regular gasoline engine oil, and has given good service when used in the regular way. If there is any particular oil to be used, will you kindly let me know what it is? I have been an enthusiastic reader of MOTOR AGE for some time and have found much valuable information in it.—G. H. Meiser.

A high fire test oil should be used for this purpose. The action also depends upon the type of carbureter used—a surface carbureter will not probably operate in this manner. A spray or jet type of float feed carbureter should be used.

MOTOR DETAILS

Green Bay, Wis.—Editor MOTOR AGE—I am constructing a bicycle motor of 2½-inch bore and stroke, and wish to ask a few questions with regard to it. What horsepower should such a motor develop at 1,800 revolutions per minute? What should be the clearance space at the end of the stroke—the valves are to be located in the cylinder head? What should be

the diameter of the inlet and exhaust valves and of their connection pipes? What is the proper size of muffler and diameter of the belt pulley on the motor?—J. A. H.

The horsepower of the motor will be about 1½ at 1,800 revolutions per minute. The clearance of compression space should be ⅛ of an inch. The inlet and exhaust valves should have 1½ inches clear opening and their connection pipes should be ⅜ of an inch in outside diameter, and of No. 20 steel tubing.

The muffler should be at least 2½ inches in diameter and 6 inches long, and belt the pulley 3 inches in diameter.

SPEED CHANGE GEARS

Buffalo, N. Y.—Editor MOTOR AGE—I would like to have the dimensions of two No. 6 diametrical pitch gears for a high speed to be used in the special changing gear shown in MOTOR AGE of July 10, 1902, to make the third speed. Have you drawing of a good clutch to be used in the fly wheel of the engine?—John Meacham.

The dimensions required for the gears for the fast speed, would be the same as those first used for the slow speed, that is 3 1-3 and 6 2-3 inches, pitch diameter, only reversed on the shafts. The clutch shown in connection with the speed transmission can be used as a fly wheel, if desired. It is simple and efficient.

MATTER OF HORSEPOWER

Aurora, Ill.—Editor MOTOR AGE—Will you kindly give the horsepower of the following sizes of motors, under the following conditions—a 4 by 5-inch motor, having 700 revolutions, 60 pounds compression, and a 4½ by 5-inch motor having 700 revolutions and 60 pounds compression?—A. C. Hall.

The 4 by 5-inch motor should develop about 3½, and the 4½ by 5-inch motor about 5 horsepower.

ROTARY GEAR PUMP

Piqua, O.—Editor MOTOR AGE—Can you inform me where I can get a rotary gear pump for circulating water, similar to the one shown on page 16 of MOTOR AGE of January 29?—Ed. H. MEINDERS.

The Brown & Sharpe Mfg. Co., of Providence, R. I., makes this style of rotary gear pump.

LAW POINTS OF COMMERCIAL VALUE

In some of the states a note not payable at a bank is not negotiable. 90 N. W. Rep. 281.

The maker of a note which has been paid may maintain an action to recover possession of it. 69 Pac. Rep. 646.

A promise made through the medium of a telegram to pay a draft is the equivalent of an acceptance in writing. 18 P. S. C. 192.

A purchaser of a note for a valuable consideration may enforce its collection, though there was no indorsement or transfer of it. 113 Fed. Rep. 87.

The failure of the maker to read a note before signing it cannot be set up as a defense to it in the hands of an innocent holder. 100 Ill. App. 228.

Where a check is sent by mail, and never reaches the party to whom it is addressed, it remains the property of the one who sends it. 66 Pac. Rep. 326.

A bona fide holder of a negotiable note purchased before maturity is protected against a defense that it was without consideration. 42 S. E. Rep. 240.

No recovery can be had, in Canada, on a note as such against one who signed it under the belief that it was merely an order for merchandise. 20 C. S. 43.

A material and unauthorized alteration of a note renders it invalid in the hands of a bona fide holder, as well as in the hands of the payee. 64 N. E. Rep. 54.

The acceptance of interest on a note in advance by the creditor from his principal debtor is prima facie evidence of an extension of time of payment. 67 Pac. Rep. 307.

Negotiable instruments under the law merchant have an assignability by virtue of which latent defense of the maker or former holders may be cut off. 100 Ill. App. Rep. 225.

Interest is allowed on a note after maturity, without express authority therein, unless there appears to be some special reason for withholding allowance. 52 Atl. Rep. 969.

The purchaser of a draft is bound to look only to the terms of acceptance; and, when he has acted in good faith, he is not to be prejudiced by the acts of the drawer. 18 P. S. C. 193.

When a written instrument is by a material alteration converted into a negotiable promissory note, as a note it is void, even in the hands of an innocent holder for value. 88 N. W. Rep. 458.

The taker for value, of past due negotiable paper, is not subject to equities against his indorser which grow out of transactions which are independent of such note or instrument. 87 Mo. App. Rep. 478.

A HALF-MILLION DOLLARS' WORTH

That Is the Aggregate Value of Automobiles Sold at Cleveland Show
—General Satisfaction Expressed—Different Ideas Relative to
Desirability of Local Shows—Summary of Sales Made

Cleveland, O., Feb. 9.—It was a well satisfied crowd that filed out of Gray's Armory at 11:30 Saturday night amid the tooting of 200 motor horns, and the strains of "Good Night Ladies" from a tired orchestra which had done valiant duty for six afternoons and evenings.

HALF A MILLION IN SALES

The general public was well satisfied. The exhibitors were satisfied for they had been kept busy with a large number of people who enquired into the merits of the various machines from the standpoint of purchasers. The best evidence of this was the remarkable number of actual sales made during the week. A MOTOR AGE man made the rounds late Saturday evening and casually interviewed every exhibitor as to the number of sales made during the week. It was done in a disinterested manner and it was found that the actual sales for the week numbered 447 vehicles, with a retail value of the surprising total of \$448,850.

PROFIT FOR PROMOTERS

Of course a certain portion of these machines, perhaps one-third, were sold to agents, the majority of them Cleveland men; but notwithstanding, it is a record of which the city may well be proud. It means that within a single week Cleveland people have purchased within eight or ten as many automobiles as have been owned in the city up to the first of the year. It means that without counting sales already made this year, and those which are to come, next spring will see double the number of automobiles on streets that were seen last year.

There is no need to relate how well the promoters were satisfied. It is claimed that the receipts from the sale of spaces and privileges paid all the expenses of the show, and if this be true, the 20,000 paid admissions said to have been received during the week will make a neat nest egg for Messrs. Collister, Sayle, Shanks and Shupe. However, no one begrudges them the money, for it was a large undertaking, satisfactorily conducted.

OUTSIDE TRADE AFFECTED

For various reasons six of the local manufacturers declined to take space and display their machines at the Armory, but there is no question that all these companies received tangible benefits from the week. People from out of town made the rounds of the various stores and factories after they had seen the show and not a few of them made purchases.

ON LOCAL SHOWS

The head of one of these concerns when asked if he did not feel sorry that he had not exhibited said: "We probably lost a number of sales we might have made had we exhibited our line. I am well aware that a number of people expected us here and looked for us, and undoubtedly some of them were induced to buy other vehicles; but in the long run we will be the gainers. We have a local agent in Cleveland and if we had given him financial assistance in making an exhibit we could not have refused to help our agent in Detroit, Washington, Baltimore, Buffalo and the dozen or so other cities which propose to hold local

shows. It might even have been of benefit for us to have helped all of these dealers this year and perhaps next year, but within two or three years the business will have passed the boom stage and will be down to a hard-pan ordinary manufacturing proposition and for us, or any one else, to follow the policy of giving annual shows in all the large centers, would be suicidal. I believe the manufacturers' association took the right step when it voted against supporting local shows and if all the Cleveland manufacturers had supported this show even to the extent of assisting their local agents—and, by the way, several of them have no local agents—it would have been a direct slap at the manufacturers' association and would have been just cause for every one following his own inclinations in the matter."

OTHER OPINIONS

A representative of a prominent manufacturing concern which did exhibit said: "This has been a wonderfully successful show but aside from assisting our local dealer in making sales we have not been benefited. It is claimed that a number of the dealers from surrounding towns came up to see the show and close for agencies, but if such is the case we are not aware of it. We have not talked to a dozen dealers and every one of those with whom we have had conversation have already closed for their agencies, the majority of them at the New York show."

Another manufacturer who exhibited said: "I am in favor of local shows for this year and perhaps next year, but after that, not any for us, thanks. With a new game the local show is the best sort of educator. There is nothing like it to stir up enthusiasm and bring out the people, but two years hence the trade will have lost the novelty phase and will be down to a business proposition. Then the wealthy class of people will buy a new automobile as they do a fine carriage and by that time the profits will be down to a point where it will no longer be possible for us to make an exhibit in all the leading cities."

A local manufacturer of parts said: "We did not go into the Cleveland show because we did not like the manner in which it was conducted. The promoters are reputable gentlemen and they are deserving of credit for their success, since unquestionably there was an element of chance in the first show of the kind ever held in the city. But we believe that a show of this kind should be conducted wholly for those directly interested and in no sense should it be a money making scheme. The different manufacturers and dealers should form a local association and agree to exhibit at a show given for mutual benefit. A committee should be named to secure the hall and make arrangements. There should be a drawing for spaces so that no one would have the advantage over the others and the members should be charged the actual pro-rata for the number of spaces used. There should be no admission fee and each member of the association should be given a certain number of tickets to be distributed among interested patrons. I believe this plan would be satis-

factory to the majority of the members of the National Association of Automobile Manufacturers, and it would not be surprising if an organization of this kind was formed in Cleveland before another winter."

CLEVELANDERS WELL POSTED

One of the most remarkable features of the Cleveland show according to those who have attended similar exhibits elsewhere was the large percentage of people who seemed to know what they were talking about in examining the features of the various machines. Cleveland people are astonishingly well versed in the intricacies of all kinds of automobiles, the gasoline in particular.

One dealer said that fully half the spectators seemed familiar with the mechanism of the various machines and were able to discuss features intelligently. Naturally this made sales more difficult than if the enthusiast simply knew that he liked the finish and style of this or that machine. In nearly every case where a sale was made it was a case of convincing the buyer as to the simplicity of the machine and the durability of the working parts. Few people took statements for granted and the majority of purchasers who did not claim to be expert mechanics, brought with them those who knew a good machine when they saw it. The reason for the superior knowledge of Clevelanders is not hard to understand. For several years past there has been a larger percentage of operators in Cleveland than in the majority of larger cities, while the large number of factories and persons interested in the production of vehicles has caused a more general interest in the machine itself than is to be found elsewhere.

PARTS SALES GOOD

There were any number of spectators who came with a view to securing ideas to assist them in perfecting vehicles which they were building themselves and not a few people were seen measuring certain parts or making sketches of certain features. The parts makers did a flourishing retail business and one material supply house filled a book nearly full of names of those requesting catalogues of parts and material. This stand in particular seemed to be the center of attraction for experts and those who professed to be. The man who did not know what he was talking about gave himself away in nine cases out of ten when he came to criticize and ask questions regarding the various parts displayed.

It goes without saying that the gasoline touring car had the call and the great majority of buyers lost interest when they were informed that a car had but a single cylinder. For those with plenty of money nothing less than a double cylinder machine would do and the very rich wanted as many cylinders as possible.

Nearly every exhibitor kept a demonstrating machine in constant operation outside and the few who did not have an extra machine found themselves badly handicapped. The best they could do was to take down names and addresses with a view to hunting up people after the show.

OLDS LED IN SALES

The Oldsmobile Co. led in the number of sales made during the week, but Manager Owen does not deny that about half of them were to dealers who came from various parts of Ohio. His business for the week would keep a good sized factory busy for a year and such orders would probably be turned down

by any other concern than the big Detroit company. His sales were 226 standard runabouts, fifty-eight touring cars and twelve coupes, reaching in retail figures \$132,600. Mr. Owen is planning to retire next year.

Almost as good was the business done by the Winton company, which sold an even thirty big \$2,500 touring cars. All of these sales went through the Winton retail store of which C. B. Shanks is manager.

MOST EXPENSIVE PURCHASE

A good third, in point of sales, was the Cleveland Automobile & Supply Co., which handles nine different lines. Its order book contains the following: Three two-cylinder Locomobile tonneaus at \$2,000; one four-cylinder Locomobile car at \$5,200; four Searchmont tonneaus at \$2,500; two Columbia broughams at \$3,200; sixteen Cadillacs at \$750; two Locomobile steamers at \$900; three Waverly runabouts at \$900, and one Waltham Buckboard at \$500; a total amounting to the pitance of \$45,400. The \$5,200 Locomobile was the most expensive machine sold at the show. It was purchased by L. D. Shoenburg, a prominent dry goods man who formerly owned a Panhard. It will be fitted with a special French canopy, aluminum body, "King of Belgium" tonneau and several other features of French extraction.

The Geneva Automobile & Mfg. Co.'s branch house sold five of the steam tonneau touring cars which list at \$1,750, four steam runabouts, together with four Yale gasoline touring cars for which it is agent.

Foster & Co., agent for the General, sold fifteen machines, the majority of them tonneau touring cars.

The Auto-Car Co. did a most satisfactory business in view of the fact that its machine had never before been seen in this section. Its sales numbered six touring cars, which so pleased the company that it will either back some agent in opening a new store, or else will establish a branch of its own.

OTHER LARGE SALES

The Hoffman Automobile & Mfg. Co. created a decided sensation with its \$900 touring car. Orders for an even ten were taken on the spot and the company has more inquiries for demonstrations than can be taken care of in a month.

For a concern which has no agent, the Shelby Motor Car Co. can feel well satisfied with its week at the Cleveland show. Ten retail sales were made, of which four were for the \$2,500 tonneau touring car, a machine which attracted much attention. After these results there will probably be very little difficulty in securing a first-class representative.

The Ohio Motor Car Co. wishes there could be a continuous show throughout the balance of the season. Its sales included one Buffalo Stanhope, three National electric physicians' carriages, two park traps and three Northern runabouts.

F. B. Stearns Co. was badly handicapped through the illness of Frank Stearns who was unable to attend the show except the closing evening for a couple of hours. Thanks to the kindness of W. F. Bonnell and Albert Gowen, two Stearns customers who volunteered their services, the situation was saved through the sale of six \$2,500 touring cars.

H. S. Moore, agent for the Elmore, sold three \$1,400 tonneaus and six \$800 runabouts. The simplicity of the two-cylinder, two-cycle Elmore motor attracted great attention and

Mr. Moore will unquestionably reap a number of additional sales when he has had time to give demonstrations to a couple of hundred interested people who left their names. Mr. Moore finds that his present store has far outgrown his requirements and he is planning to build a fine establishment. He will probably stick to the East End, where he has held forth in the bicycle business for seven years.

Warwick & Bissell, agents for the Thomas, had but one machine and were unable to give any demonstrations. Several orders were entered without any trial and the firm has thirty-five or more prospective customers who have promised to delay purchasing until they have had a ride in the Thomas. The firm has not settled on a permanent location and for the present will occupy half the store of the Ohio Motor Car Co. in the Pythian Temple building.

The Union Automobile Co., of Union City, Ind., is not sorry it came to the show, as it sold eight of its runabouts. Four of these go to the Squires Carriage Co., a leading carriage concern which has arranged to take the local agency for the unique friction drive machine.

BUYERS TURNED DOWN

Rogers & Thacher, the new local manufacturers, took a few orders for their big 35-horsepower touring car which was illustrated in the last issue of MOTOR AGE. The firm is not anxious to close orders as it has not yet thoroughly tested its car and will probably make some changes and refinements before attempting to place the vehicle on the market.

H. B. Wick & Co., of Youngstown, O., who displayed their famous "Blue Goose," were in about the same position. They claim to have positively turned down two orders, as they are not yet in shape to build machines in quantities. They are occupying a small shop at Youngstown and on account of difficulty in securing labor and material are unable to guarantee deliveries before July 1. They are considering the advisability of moving their plant to New York. A member of the firm states there is no truth in the rumor that they are about to consolidate with the Fredonia Mfg. Co. of Youngstown.

Wednesday evening the promoters entertained seventy-five exhibitors and newspaper men at a Dutch banquet and vaudeville show. The good fellowship of the promoters was shown by the fact that among the guests were six representatives of local manufacturers which declined to exhibit at the show.

PASSING SHOW NOTES

L. J. Mueller & Co., the new automobile material jobbers, sold parts to over twenty people who are planning to build gasoline rigs in this city. Evidently the bottom of the list of Cleveland manufacturers is not yet in sight.

F. J. Wagner and W. C. Jaynes, of Buffalo, were present in the interests of the Buffalo automobile show of March 9 to 14. Wagner modestly stated that the Buffalo affair will be four times as large as the Cleveland show. He claims forty-five exhibitors have already applied for sixty-two spaces, among them four Cleveland concerns.

Alexander Winton spent several evenings at the Winton stand. Everyone was curious to learn something about the make-up of the new Bullet, with which Winton hopes to bring home the Gordon Bennett cup. They did not get much satisfaction out of Mr. Winton, however, and it is probable that no one else knows

all the details of the new racer, so closely is it guarded.

Charlie Weaver did not go in for full dress; in fact he was in his shirt sleeves most of the time. The heat from the new Kelley gasoline burner which Weaver manipulated about three-fourths of the time was more than he could stand with comfort.

CATALOGUES RECEIVED

The catalogue of steam gauges issued by the Schaeffer & Budenberg Mfg. Co., of New York and Chicago, may be of use to the steam automobilist who is in need of the means whereby to tell the amount of power he has on tap.

Harry R. Geer, who styles himself the motor cycle man of St. Louis, Mo., has issued a second-hand list of motor bicycles. In it machines of all the prominent American makes are shown, together with some motor cycle parts and appurtenances which are not second-hand.

The Relay Motor Car Co., of Reading, Pa., has issued a neat little booklet showing the different patterns of the Wyoma vertical motors and the Wyoma running gear, transmission gear, differentials and motor bonnets.

The Kensington gasoline touring car made by the Kensington Automobile Mfg. Co., of Buffalo, N. Y., is fully described in a booklet containing several illustrations showing the mechanical features as well as the exterior appearance of the car.

The Silent Autocar is the title of a handsome catalogue which Frank P. Illsley, of Chicago, western agent for the Autocar Co., of Ardmore, Pa., has issued. Colored stock and pretty pictures characterize it.

The Hussey Automobile & Supply Co., recently organized at Detroit, Mich., by P. J. Hussey, issues a small booklet in which is shown an attractive line of parts including the Hussey steering wheel, running gear, horizontal motor, radiator, circulating pump, muffler and various patterns of oilers.

All of the features of all of the motors manufactured by the Brennan Motor Co., of Syracuse, N. Y., are illustrated and fully described in a new booklet.

The Fisk Rubber Co., of Chicopee Falls, Mass., has issued a new list of its various patterns of automobile, bicycle and vehicle tires.

The National electric, Stearns and Cadillac gasoline lines are shown in a combination catalogue issued by the Cadillac Automobile Co., of Illinois, which acts as agent for these three lines.

Facts about and features of the Northwestern storage battery are presented in a booklet recently issued by the Northwestern Storage Battery Co., of Chicago. One of the facts is a testimonial to the effect that a 96-mile run was made on one charge.

BACK TO PARIS

Henri Fournier and Mm. Clement, Lucas, Neubauer, Rabousdin, and Charley, Parisian tradesmen, who were at the New York show, sailed on the steamer Lorraine Saturday.

An order by a retail merchant, directing a wholesale dealer to ship certain merchandise through any jobber or direct, and purporting to contain a bill of goods, with prices annexed, is not a negotiable instrument. 50 Atl. Rep. 683.

It is beyond dispute that the show will be equally as great as the one which was declared so great in January.

WANTS NO BUSINESS TESTS

The N. A. A. M. Decides That It Is Not Advisable to Co-operate In Promoting Such an Event This Year

New York, Feb. 7—There was received at the Automobile Club of America a formal communication from the National Association of Automobile Manufacturers notifying the club that the association did not favor a test for commercial motor vehicles this year. The letter stated no reason whatever for its pointed declination to approve of any business vehicle test, which of course embraced the trials proposed to be held under the club's auspices next spring.

NO REASON GIVEN

The fact that such action had been taken at a meeting of the N. A. A. M. executive committee on February 4 had been published the day before, so the receipt of the letter had been forestalled.

In making this action of the executive committee public Secretary Unwin would state no more to the newspaper men than that the resolution had been passed unanimously and without debate.

CLUB SPIRIT AROUSED

The news and official communication were both received at the club with indignation and words were not minced in some quarters in charging the N. A. A. M. with going out of its way to interfere with the club's project, and with unfriendliness toward its conduct of various tests seeking to give the public unbiased facts and results as to automobiles and their efficiency.

In the course of two interviews Secretary Butler stated to a MOTOR AGE man the club's side of the controversy—if there can be said to be any controversy in the absence of any statement or argument advanced on the subject by any official of the N. A. A. M.—about and in part as follows:

THE CLUB'S ATTITUDE

The club undertook the preliminaries to the promotion of the test primaries in response to a request from Ralph Morgan, of Worcester, Mass., who was interested in a company manufacturing heavy motor trucks and bearing his name, and also in response to what it deemed from individual newspaper expression on the subject to be a popular demand. If the writer recalls Mr. Butler's words correctly there were requests from other makers of business vehicles as well, or at any rate other makers wrote subsequently approving of the proposed tests. At first the project had to do more particularly with testing heavy trucks, but there seemed to be a demand that the trials should include all classes of commercial vehicles of all powers and also furnish tests for long hauls. There was a representative gathering of makers at the conference held during the show and since then other manufacturers have written approving of the scheme.

NO ULTERIOR MOTIVE

The club argues that it has no axes to grind in the promotion of any of the tests it has conducted and proposes to conduct and that the public has confidence in the impartiality of its demonstrations and its unbiased announcement of results and deductions therefrom. It also believes it has benefited the industry and advanced automobilism in this

country through the trials it has promoted and will continue to be an ally of the manufacturers as well as a missionary among the people.

WILL NOT BE DROPPED

There has been no disposition to declare the trials off. "Such a demonstration through our streets," said Mr. Butler, "not only by heavy trucks in the business section, but by delivery wagons in the residential districts, will give business automobiles a good boom with the public. The participants, through the signs their cars will carry, will also get much individual advertising. We ask none to enter the tests who does not so desire, and are at a loss to see why the N. A. A. M. should have deemed it expedient to formally declare against them. Since the conference we have had many inquiries for particulars of the proposed test, which would seem to indicate a desire to participate in them."

CLEVELAND SUFFERS SHOCK

Election of Eastern Men to N. A. A. M. Offices Not a Sweet Pill to Western Makers

Cleveland, O., Feb. 9—There is much disappointment among the manufacturers in Cleveland at the result of the election of officers of the National Association of Automobile Manufacturers which was held in New York last week. Almost fifty per cent of the association's membership comes from the territory west of, and including Buffalo, and this portion of the country produces considerably more than half the American output. The Winton, White, Baker, Peerless, American, Olds, Elmore, Packard, Northern and others almost too numerous to mention, come from factories in Cleveland or territory adjacent and in view of this fact, together with the fact that during the past two years the presidency of the association has been an eastern man, made it seem but fair to the Cleveland manufacturers that the presidency should come to this city.

At the time this was first suggested the eastern manufacturers seemed to acquiesce. The Cleveland manufacturers settled on Alexander Winton as the logical executive in view of his long standing in the trade, but when he declined to consider the nomination, the strength of the local contingent was centered on Windsor T. White, of the White Sewing Machine Co. At the meeting held at Madison Square Garden Mr. White received pledges from manufacturers in all parts of the country.

It is needless to say that the result of the election which gave only the positions of second and third vice-presidents to westerners came as a veritable shock to the Clevelanders, some of whom are exceedingly wroth and vow more careful campaigning another time.

SPAULDING MAY QUIT

It is reported that the Spaulding Automobile & Motor Co., of Buffalo, N. Y., is going out of business. It began voluntary dissolution proceedings in the special term of the supreme court last week. On the application of a majority of the stockholders Justice Childs appointed Nelson P. Baker temporary receiver, fixing his bond at \$12,000. Justice Lambert also issued an order requiring all interested persons to appear before a referee on May 1 and show cause, if they can, why the corporation should not be dissolved. Among the company's creditors are the Fisk Rubber Co., the Baldwin Chain & Mfg. Co., the Badger Brass Mfg. Co. and Gray & Davis.

BUDLONG MADE PRESIDENT

Executive Committee of National Association of Automobile Manufacturers Votes for Hartford Man

New York, Feb. 8—At a meeting of the executive committee of the N. A. A. M. last Wednesday—at which all the members but Mr. Olds were present—a nominating committee consisting of Mr. Leonard, Ward Leonard Electric Co., New York; Mr. Allison, Woods Motor Vehicle Co., Chicago, and Percy Owen, representing the Winton Motor Carriage Co., Cleveland, nominated the following ticket, which was unanimously elected: M. J. Budlong, Electric Vehicle Co., Hartford, president; H. Ward Leonard, Ward Leonard Electric Co., New York, first vice-president; Windsor T. White, White Sewing Machine Co., Cleveland, second vice-president; Charles Clifton, George N. Pierce Co., Buffalo, third vice-president, and Percy Owen, New York, representing Winton Motor Carriage Co., Cleveland, treasurer.

Harry Umvin's appointment for one year as secretary by the preceding committee in January was affirmed.

CONTEST RECOMMENDATIONS

The recommendations of the annual meeting that in future reliability tests be run on the plan of the Circuit de l'Herault; that non-stop contests be limited to 100 miles, and that permission be asked of the city for a public speeding, hill climbing and braking demonstration at the end of the speedway and up Fort George hill were referred to the technical committee.

There will be a meeting of the association in this city on March 18.

TRYING TO AROUSE INTEREST

American Automobile Makers Are to Be Enthused on Matter of Exhibiting at St. Louis

The National Association of Automobile Manufacturers is officially engaged in stirring up interest in its individual members concerning the world's fair at St. Louis, commemorating the Louisiana purchase. The representation of American automobile manufacturers at the 1904 exhibition is in a peculiar condition. The officials of the world's fair have been kind enough to permit the national association to apply for a bulk space, to be occupied individually by the manufacturers, but this application cannot be rendered safe unless the manufacturers in turn make early requisition upon the association or directly upon the fair officials. Thus far the makers have been slow in responding to the general invitation to exhibit on free exhibition space. Nineteen hundred and four has seemed a long way off to most of them.

In the disposition of exhibition space in the transportation, as in other world's fair buildings, the fair commissioners give one-half of the floor space to American exhibitors and the other half to the combined exhibits of other countries. There are in the transportation building 650,000 square feet of floor space, of which 400,000 square feet are available for exhibits. France alone has made application for 175,000 square feet of space in which to display its transportation products. A large part of these products will comprise French automobiles. The National Association of

Automobile Manufacturers is desirous that the American automobile builders shall make as extensive and impressive a display as the French makers, even if they are not actuated to a similar end by other motives.

The association's secretary, now in Chicago on account of the Chicago automobile show, is conferring with W. A. Smith, chief of the department of transportation exhibits of the St. Louis exposition, and feels confident that the fair commissioners will be glad to treat directly with the association in all matters pertaining to the representation of the American automobile manufacturers. But the association, in order to do business on a business basis, must have the support, actual and not promissory, of its members. Hence there will be a campaign during the show to secure a substantial representation and a goodly line of applications for space. Mr. Smith will probably assist the officers of the association in this work.

HANDSOME CAR FOR CHICAGO

The Electric Vehicle Co.'s Chicago branch store has just received a handsome type of electric coupe, operated from the inside, which is especially designed for physicians' use and for those desiring a comfortable vehicle in all sorts of weather conditions. The controlling, steering and brake levers are all conveniently at hand within the vehicle, which may be entirely closed when desired. The front and sides are nearly all of heavy plate glass and there is a large window in the back. It is richly upholstered, has an electric dome light and provision is made for a foot warmer.

CENTAUR GARAGE OPENED

The Centaur Motor Vehicle Co., of Buffalo, N. Y., manufacturer of Centaur electric vehicles, has established a general automobile station at 59 Franklin street, Buffalo, which will be conducted independently of the manufacturing department. The new station will be fully equipped to conduct a general agency business and properly care for steam, gasoline and electric vehicles. This station will be one of the largest and most centrally located stations in the city, and will be maintained by

competent men. The company has already taken the agency for the Cadillac and Yale cars in western New York and Pennsylvania, and will probably be identified with several other prominent lines.

DAYTON TO MAKE PLUGS

The Dayton Electrical Mfg. Co., of Dayton, O., manufacturer of Apple gas engine igniters, has purchased patents Nos. 634,430, 663,653, 647,946 and 675,557 on the cotton ignition plug, from Walter H. Cotton and Albert Kunze, of Chicago. The company will start to manufacture these plugs at once and expects to put them on the market shortly.

HEATH WITH THOMAS

S. F. Heath, for the past three and one-half years manager of the sales and advertising departments of the Wisconsin Wheel Works, resigned his position with that company January 15, and on January 19 accepted one of a like capacity with the E. R. Thomas Motor Co., of Buffalo, N. Y.

Mr. Heath's well known reputation among the trade for honest methods, and his close attention to the wants of his customers, which he well knows from his extended experience in all the branches of the trade, is sure to be of profit to the Thomas people. He will be at the Chicago show with the Thomas exhibit.

ANOTHER FOR DETROIT

By next season the plant of the Sintz Gas Engine Co. and the Michigan Yacht & Power Co., of Detroit, Mich., is likely to be so enlarged and remodeled as to permit of the manufacture of automobiles on an extensive scale. To enable this plan to be carried out, the capital stock of the concern will need to be greatly increased. These plans are contingent on the success of experiments now being made at the plant of the company on Jefferson avenue.

NORTHWEST GOOD FIELD

"Spokane is the greatest automobile town in the northwest," said Fred Merrill, the well known bicycle man of Portland, Ore., recently. "There are more automobiles used in and about Spokane than in any other town in the northwest."

Mr. Merrill is preparing to secure another building for his automobiles and will rent and sell them. He will have a large stock on hand and now has a carload of automobiles on the road for Spokane. Spokane is to be the general distributing point for that section and as a consequence the capacity of the Merrill store will be more than doubled.

NEW COMPANIES

The Phelps Motor Vehicle Co. has been organized at Portland, Me. The capital stock is \$300,000.

Articles of incorporation have been filed by the Nelson Gas Engine & Automobile Co., of Harlan, Ia. The capital stock is \$50,000.

The Scranton Automobile Co. is being organized at Scranton, Pa. From the conduct of a garage the concern will branch into manufacture.

The Tennant Auto Tire Co. has been organized at East Orange, N. J., with a capital stock of \$300,000. It will make rubber tires.

The United Motor & Vehicle Co., of Cranford, N. J., has been incorporated with a capital stock of \$300,000. Its object is to manufacture automobiles.

The Patrick-Willson Co., with a capital stock of \$25,000, has been incorporated to manufacture the McVicker gasoline engine at Omaha, Neb.

MOTOR STAGE LINES

A. E. Moore proposes to establish an automobile omnibus and wagonette line at Walla Walla, Wash., in the spring. A ten-passenger wagonette has been already ordered.

J. A. Genung, a livery stable man of Marion, Ind., will install a system of automobile cabs.

J. J. Morgan will establish an automobile stage service between Joplin, Mo., and several neighboring towns. Several trips each day will be made over all the routes.

Several patterns of neat steam carriages are shown in the new booklet of the Rochester Carriage Motor Co., of Rochester, N. Y.

The workmen of the Mors factory are out on a strike. This may delay the shipment of the big racers this summer.

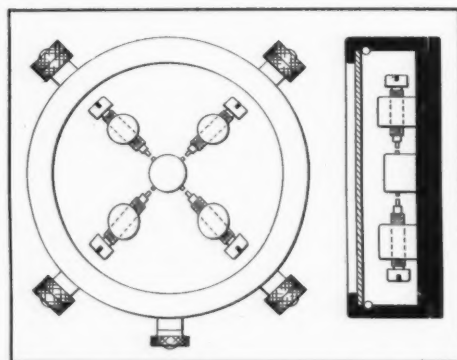
An addition is being erected to the plant of the Matheson Motor Car Co., of Grand Rapids, Mich.

NEW CURE FOR FOULED SPARKING PLUGS

A method accidentally discovered by one of Panhard & Levassor's workmen, of obviating ignition difficulties due to greasy and foul sparking plugs, is of interest to both gasoline automobile owners and makers. This is to give the coil more work to do, forcing the spark to arc or jump across two gaps instead of one as is usual.

An extra air space or gap is interposed in the secondary circuit, outside the combustion chamber of the motor, and where it may be readily inspected by the operator of the vehicle. With this arrangement the plug will spark even if the porcelain be coated with soot and the platinum points covered with grease, while without this extra external air space of gap, no spark can be obtained, no matter how powerful the coil and battery may be.

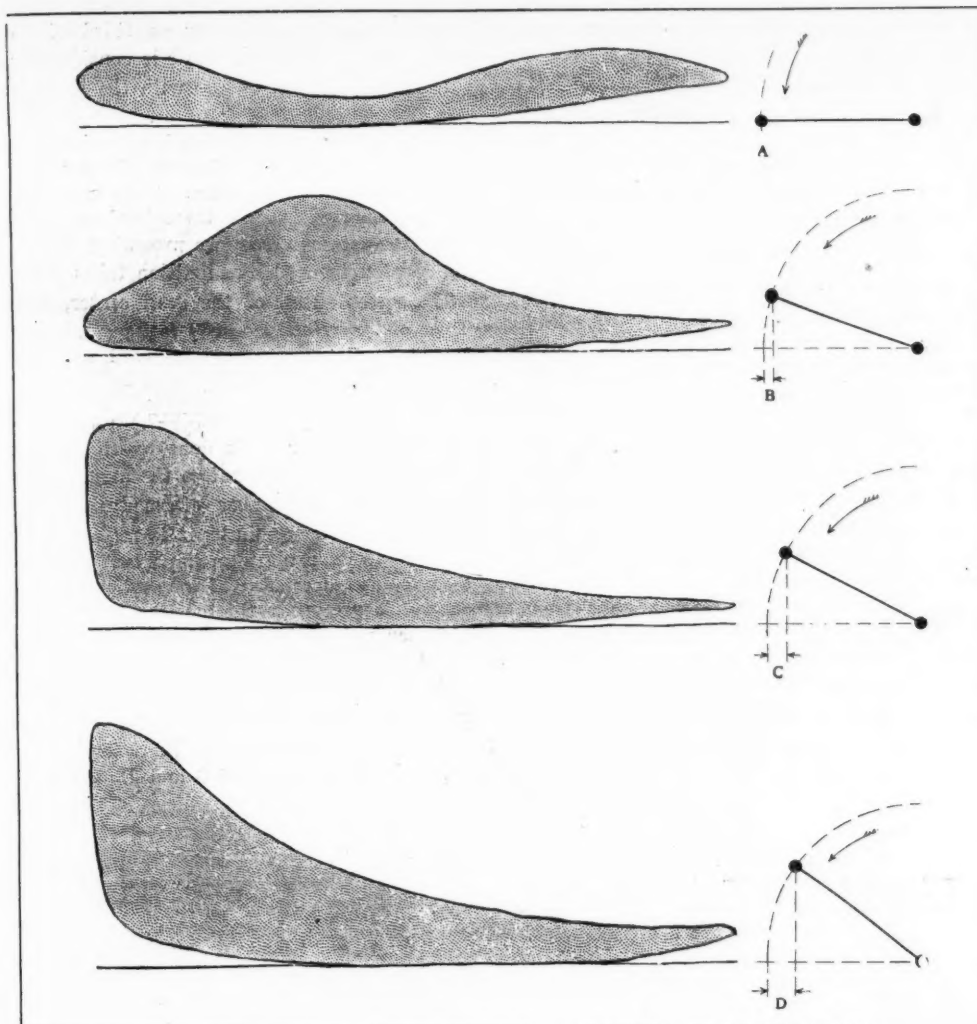
The explanation given is that the production of a high pressure, or potential, at the terminals of the secondary of an induction coil depends essentially upon the secondary being on open circuit at the moment when the



trembler interrupts the primary current. The "soot bridge," which produces a low ohmic resistance in the plug, results in a partial short circuiting of the secondary. Under these circumstances the production of a high electromotive force at the terminals is impossible.

The current, small as it may be, which leaks

across the plug the moment the magnetic flux begins to vary, retards demagnetization; and high pressure depends, of course, entirely upon rapid demagnetization. It may be said that the energy of discharge is dissipated almost wholly in the high resistance secondary wire itself, instead of externally. By introducing the auxiliary air gap into the circuit, the conditions are entirely changed. The secondary is then on open circuit, and demagnetization is rapid and effectual. A high pressure of many thousands of volts is generated, and a disruptive discharge takes place in the circuit. Under these circumstances the partial short circuiting of the spark gap on the plug is comparatively immaterial. High pressure oscillatory discharges take short cuts, and depend little on mere ohmic resistance. It is well known, for example, that a lightning discharge will traverse many feet of air rather than go round a longer metallic path of infinitely smaller resistance. The surging in the circuit will inevitably produce a spark be-



IGNITION POINT DIAGRAMS

is drawn into the carbureter through the openings A, and in its effort to pass through the small holes in the diaphragm B, forces the needle point C from its seat. The needle point having been drawn from its seat by this action, a small quantity of gasoline is allowed to flow from the nozzle D, out and over the diaphragm B. The intruding air carries the gasoline with it through the small holes in the diaphragm, thus thoroughly mixing the air and gasoline during this passage.

HOT WATER HEATED

To govern the flow of gasoline, a needle valve is located on top of the carbureter directly above and centrally with the air openings. Air regulation is obtained by means of the disk E, which has eight holes registering with a like number in the head or cover of the carbureter.

The carbureter is jacketed so that in cold or damp weather it may be connected with the hot water system of the motor jacket. It probably is preferable to heat the carbureter with water than with the exhaust gases. If hot water is used in the carbureter jacket the motor will readily start even on the coldest day, after having been running not more than an hour before, while if the exhaust gases were used the carbureter would be cold in one or two minutes after the motor was stopped. In ordinary weather it will not be necessary to use the water jacket, and a cock should be placed in the pipe leading to the hot water supply, that it may be readily shut off.

ITS CONSTRUCTION

The jacket around the upper portion of the carbureter has four cored openings to properly vent it when being cast. These are to be tapped with a suitable pipe tap. Two of these

tween the wires, even though the "soot bridge" may be there as an alternative path.

When this extra air space or gap is used a marked change can be detected in the working of the interrupter employed with the coil. The beats become slower and the discharge heavier. Owing to the secondary not being able to discharge itself readily, the duration of the inductive effect in the coil is prolonged, and the magnetism of the coil brought nearer to saturation. This of itself will increase the sparking power, and reacts on the flow of the primary current, and so reduces the rate of vibration of the interrupter; this slowness also tends to increase the sparking length of the coil.

A device is illustrated in the form of a circular casing with glass cover, in which may be located the extra air gaps or spaces in the secondary wires. It is applicable for one or more cylinders, four being shown in the drawing. Four terminals are provided for the secondary wires leading to the spark plugs, and one terminal only for the ground to the motor. The working of the coils can in this manner be plainly seen, as the device can be conveniently located on the dash in plain sight of the operator.

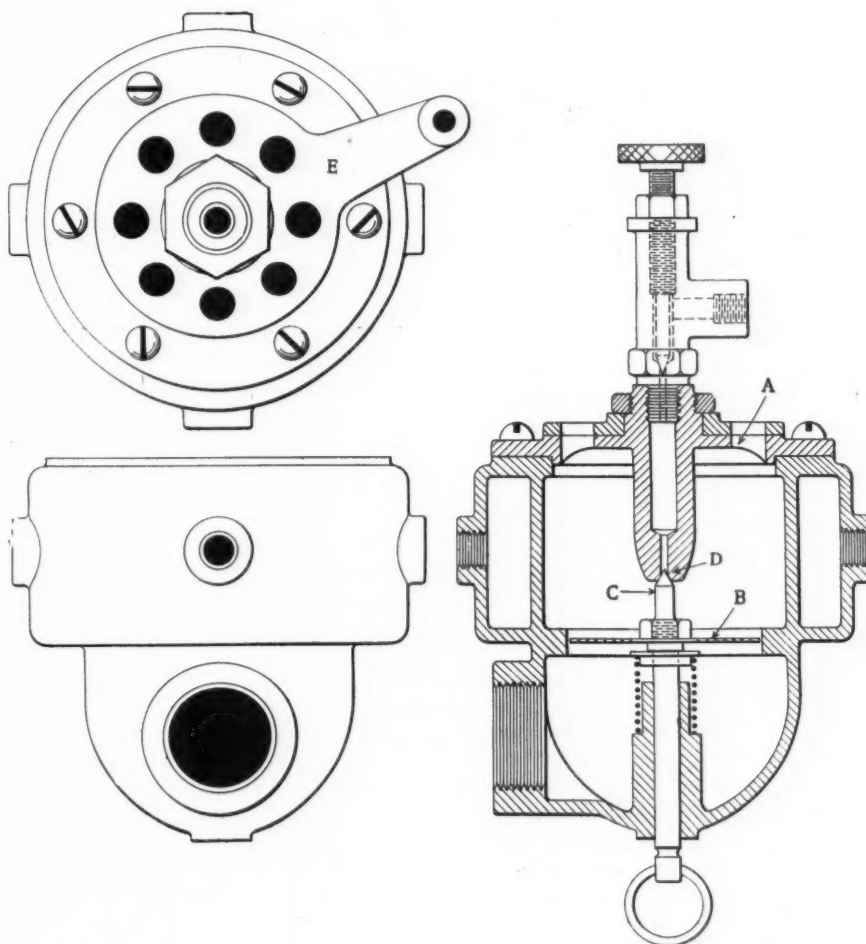
NEW DIAPHRAGM CARBURETER

English Construction Combining Positive Action, Thorough Mixing and Heating

The carbureter illustrated has been designed to increase the carburation effects secured by carbureters of this type, in which a circular diaphragm or valve is used to control the gasoline supply taken through a needle valve whose point is on the end of the valve stem.

During the suction stroke of the motor, air

DIAPHRAGM CARBURETER



openings are to be used for the water connections and the other two stopped with pipe plugs. The needle stem is made of steel with a shoulder and nut to hold the brass diaphragm in place. Seven circular rows of holes of suitable size should be drilled in the diaphragm. A hole should be drilled in the lower end of the needle stem for a ring as shown. This enables the stem to be turned around for re-grinding, and also permits letting down a small quantity of gasoline upon the diaphragm when starting the motor. The carbureter parts may be made of brass or aluminoid, as desired. The diaphragm should be almost as large as the opening in which it moves upward and downward.

The carbureter is simple and inexpensive to make, and with the exception of the air regulating disk E, may be made on a 6-inch lathe.

In order to secure the best possible results it should be placed as close to the inlet of the cylinder as possible.

VALUE OF EARLY IGNITION

Until the recent advent of devices for taking indicator diagrams from high speed gasoline motors, very little practical information was securable concerning the gain in efficiency

by early ignition; the exact cylinder conditions from which this advantage resulted being undetermined. While theoretical diagrams and formulas based on thermo-dynamic laws are found in plenty, no reliable data has been furnished to show how near the actual conditions within the motor cylinder approach the theoretical deductions.

FOUR CASES

The diagrams given herewith show fully and clearly the actual conditions in the motor cylinder and demonstrate conclusively the necessity of early ignition to secure efficient working results.

The first of the four cards shows a diagram taken with the ignition occurring exactly on the dead center. The piston velocity under this condition is 300 feet per minute. It will be seen from the diagram that near the center of the piston stroke the piston is actually traveling faster than the rate of propagation of the flame of the burning charge, thus preventing the charge from attaining its maximum or highest available pressure.

The second card shows a diagram taken with the ignition advanced 19 degrees and with a piston velocity of 450 feet per minute. The maximum pressure is not reached until

the piston has traveled over one-third of its stroke. The area of this card is considerably greater than that of the one with the ignition taking place at the dead center.

The third card of the series has the ignition advanced 29 degrees and shows a piston velocity of 600 feet per minute. This card approaches nearer to the theoretical requirements than either of the two preceding ones.

In the fourth card, the ignition takes place at 35 degrees ahead of the dead center, and with a piston velocity of 750 feet per minute. This results in an almost ideal card and one almost theoretically correct.

RESULTING FORMULAS

As the energy or work done by the motor is at all times proportional to the area of the diagram, and the number of explosions or working strokes per minute, it is readily seen that early ignition plays an important part in the economical operation of a gasoline motor. To more clearly locate the position of the piston at the point of ignition with relation to the end of its stroke, the values in terms of the stroke are given for each of the four positions of the crank shown in the illustration. Let S equal the piston stroke in inches; then $A=0$, $B=0.054 S$, $C=0.125 S$ and $D=0.181 S$.



ADJUSTABLE STEERING GEAR

Letters patent No. 719,562, dated February 3—Alanson P. Brush, of Detroit, Mich.; assignor of one-half to the Cadillac Automobile Co., of Detroit, Mich.—The invention comprises a steering mechanism in which the spur gear and gear rack employed to transform the rotary movement of the steering wheel column into a lateral reciprocating movement to operate the steering links, are provided with adjustment means. The housing which carries the spur gear is provided with a cross tube or sleeve within which is an eccentric bearing block or sleeve supporting the reciprocating gear rack. This eccentric is rotatable within the housing by means of screw threads and is secured in any manually adjusted position by locking rings. One side of the central portion of the eccentric is cut away to permit the engagement of the teeth of the gear with those of the gear rack. It is obvious that by shifting the position of the eccentric the gear rack may be brought closer to or further away from the spur gear in order to take up back lash or play, or to relieve binding.

VARIABLE STROKE MOTOR

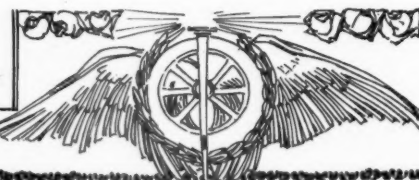
Letters patent No. 719,855, dated February 3—Albert F. Parks, of Brooklyn, N. Y.—In order to secure a variable stroke action in an internal combustion motor, an eccentric connection between the piston rods and the crank pin is provided that this connection may cause an orbital movement for the end of the piston rod. The invention is shown adapted to an ordinary two-cylinder motor. Upon the common crank shaft pin is a loose sleeve having, rigidly attached to or made integrally with it, a pair of diametrically opposed eccentrics to

PATENTS OF THE WEEK



each of which a piston rod is attached by means of an ordinary eccentric strap.

This variable connection for the piston rods causes the pistons to accomplish a cycle of operations consisting of four strokes of unequal length. Two of these strokes are of equal length—the admission and explosion strokes. The compression stroke is somewhat shorter and the exhaust stroke considerably longer than either the admission or the explosion stroke. The cycle of the motor is shown in the diagram, relative to which the inventor says that the piston draws in its charge at or slightly below atmospheric pressure and on the out stroke moves in compressing the charge to a point considerably in the rear of the extreme limit of its out stroke, whereupon the charge is ignited and exploded. During the returning in stroke the gases are expanded substantially in the usual manner, except that the extreme limit of the expansion stroke is considerably beyond the corresponding point of the induction stroke. After expansion is complete the burned products of combustion are expelled substantially at at-



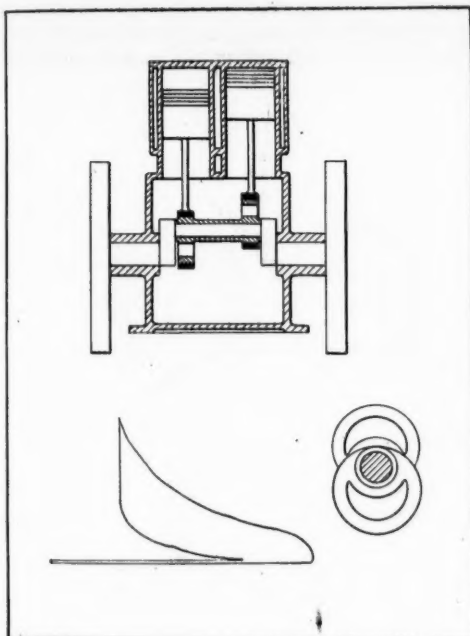
mospheric pressure by a piston stroke equal to either the induction stroke or the expansion stroke plus the distance which represents the amount of displacement of the extreme points of the expansion stroke as compared with those of the induction stroke.

FLOAT FEED CARBURETER

Letters patent No. 719,486, dated February 3—Frederick H. Messinger of New York, N. Y.—This is a float feed carbureter in which a peculiar form of vaporizing or carburation chamber is employed. There is little novelty in the constant level feed chamber as it comprises a reservoir equipped with an ordinary form of float that actuates a needle valve controlling the inlet of raw gasoline. A spring controlled plunger allows the manual opening of the needle valve to accelerate the flow of gasoline.

The carburation chamber is cylindrical in form and is attached to the float feed chamber by a coupling which enters its end. The passage terminates in the carburation chamber-coupling is controlled by an ordinary needle valve with a threaded stem, while, between passage of gasoline through the hole in this the valve and the nozzle in which the coupling ber, is an air inlet passage, provided at its top or outer end with a ball check valve. The nozzle in the carburation chamber is downwardly projected and provided with a bevel faced disk whose purpose is to spread the flow of gasoline. The opening between the disk and the nozzle is adjustable by means of the screw threaded shank with which the disk is provided.

The main air inlet is at the bottom of the carburation chamber and between this opening and the nozzle are several baffle plates whose openings are alternately arranged that



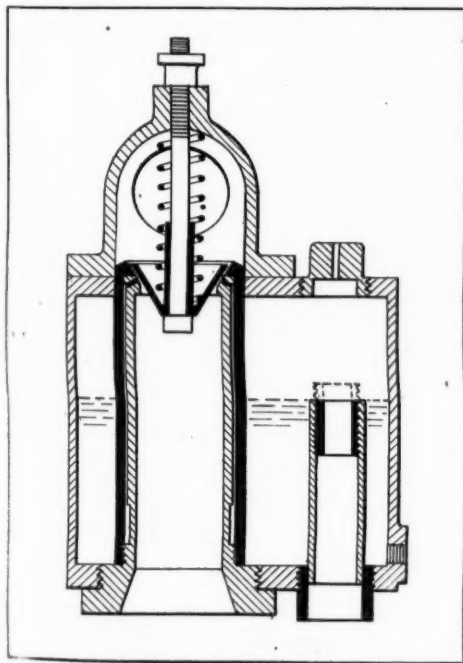
Park's Variable Stroke Motor

the incoming air will be forced to take a tortuous course upward. Above the nozzle are similar baffle plates. At the top of the chamber is an outlet which is controlled by an ordinary plug cock, above which, in turn, is a screen and then the coupling with the pipe that carries the mixture to the motor.

The assumed operation of the apparatus is that the gasoline will be partially atomized when the auxiliary air draft coming through the ball check valve strikes it before reaching the nozzle, and that after being spread out by the nozzle disk, the upward current of air will pick it up and perfect an intimate mixture while passing through the series of baffle plates. The screen above further tends to atomize the charge and also prevents foreign matter in the fuel from being carried to the motor. The outer end of the cylindrical carburation chamber—that opposite the coupling with the float feed chamber—is furnished with a glass or mica face so that the operation of the device may be watched.

CAPILLARY FEED MIXER

Letters patent No. 719,536, dated February 3—Henry W. Tuttle, of Philadelphia, Pa., assignor to John M. Scott, of Philadelphia, Pa.



Tuttle's Mixer

—The carbureter forming this invention combines means for maintaining a constant level of the gasoline supply with a capillary feed action. The gasoline is mechanically pumped from the main reservoir to a constant level compartment in which the level is maintained by an overflow pipe extending back to the main tank. From this chamber the gasoline is piped to the principal chamber of the carbureter, in which the second constant level is maintained by another overflow pipe that meets the first overflow pipe running back to the main tank. The level in the carbureter chamber is variable by means of a screw-threaded telescopic section of the second overflow pipe.

Within the constant level chamber of the carbureter is a vertical, double walled tube forming an annular channel connected with the constant level chamber by suitable apertures near the bottom. The interior of the tube serves as an air inlet. The top is conical or flaring and receives a conical baffle plate

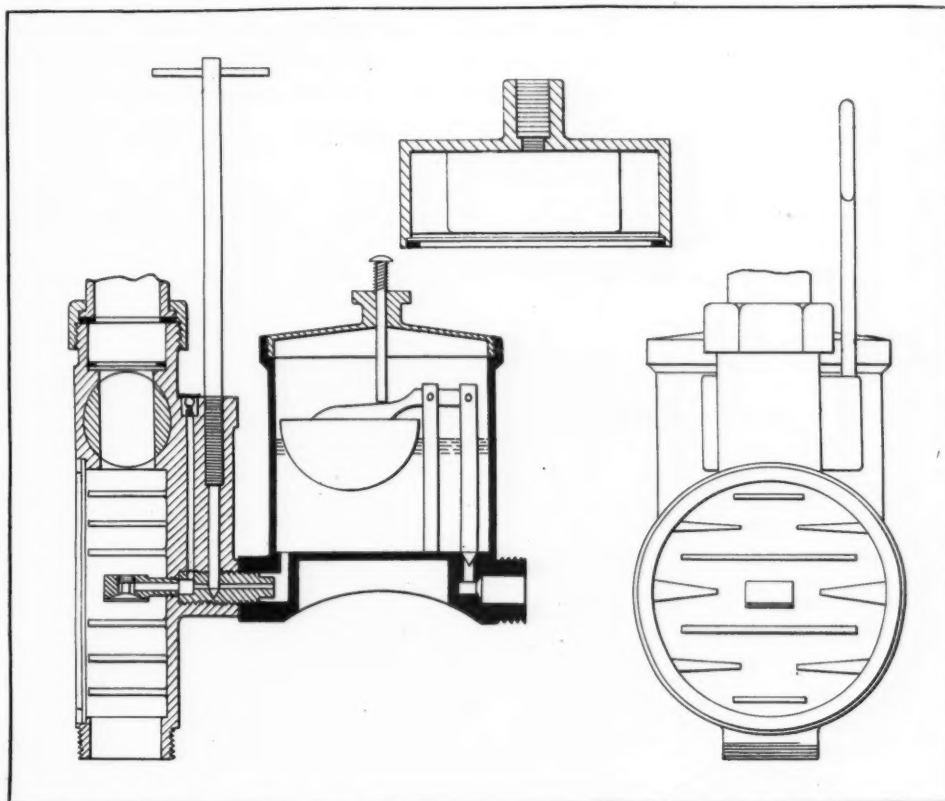
brake a corresponding increase in the power application.

Letters patent No. 719,822, dated February 3—Shirley S. and Albert Lewis, of Syracuse, N. Y.—The invention comprises a friction drive system in which a two-cylinder horizontal motor is placed longitudinally of the frame near one side, with the driven friction pulley bearing against the fly wheel and being on a shaft extending backward to the bevel gear seat which transmits the power to the rear axle.

Letters patent No. 719,770, dated February 3—E. Ralph Estep, of Chicago, Ill.; assignor of one-half to Samuel A. Miles, of Chicago, Ill.—The invention comprises a motor bicycle frame in which the crank case of the motor is built into and used as the bottom bracket of the frame.

BUSINESS LAW NOTES

An indorsement on a note making it payable to the order of a certain person "without re-



MESSINGER'S CARBURETER

which under the tension of a light spring is normally held close down to the flaring tube seat but not quite closing the opening. The flaring seat surface connects with the annular channel around the central tube by several inclined openings through which the gasoline may be drawn upon the suction stroke of the motor, at which time the baffle plate is slightly lifted from its normal position. It is obvious that the gasoline drawn through the inclined openings and distributed upon the flaring seat will be picked up readily by the incoming air from underneath. The mixture is then carried directly to the motor.

OTHER PATENTS

Letters patent No. 719,806, dated February 3—Daniel E. Johnson, of Hartford, Conn.; assignor to Frederick C. Billings, of Hartford, Conn.—This is a mechanism for controlling an automobile, whereby the application of the brake means an automatic decrease in the applied motive power and the release of the

course," signed by the payee, does not destroy its negotiability in the hands of an innocent holder. 91 N. W. Rep. 399.

Notes, to be negotiable, must be payable to a certain person, or his order, to bearer, or some other language of like import must be incorporated in them. 69 N. W. Rep. 39.

Where one adds his name to a note, after its delivery to the payee, without receiving any consideration, it is a *nudum pactum*, as to the party so signing, if signed after maturity, and is not enforceable. 88 Mo. App. Rep. 462.

A person not appearing to be a party to a negotiable note, either as payee or indorsee, who puts his name on the back of it in blank, at its inception and before its negotiation, is presumed to be a joint and several promisor.

Bona fide holders of a note cannot be defeated, in an action against indorsers, on the ground that it had no legal inception, and was put into circulation contrary to the purpose which induced its creation. 72 N. Y. Sup. Rep. 691.

THE DARRACQ

The Feature of the Paris Show

THE FAVORITE OF TWO CONTINENTS

The Maker of More Records Than Any Other
Car ■ Three-quarters of the Foreign Cars
Imported in 1902 Were DARRACQ'S Sold
by This Company ■ ■ ■ ■ ■

8, 9, 12, 16, 20 AND 24 HORSE-POWER

Place Your Orders Early

Accessories and Parts Always in Stock



IMMEDIATE DELIVERIES

American Darracq Automobile Co.

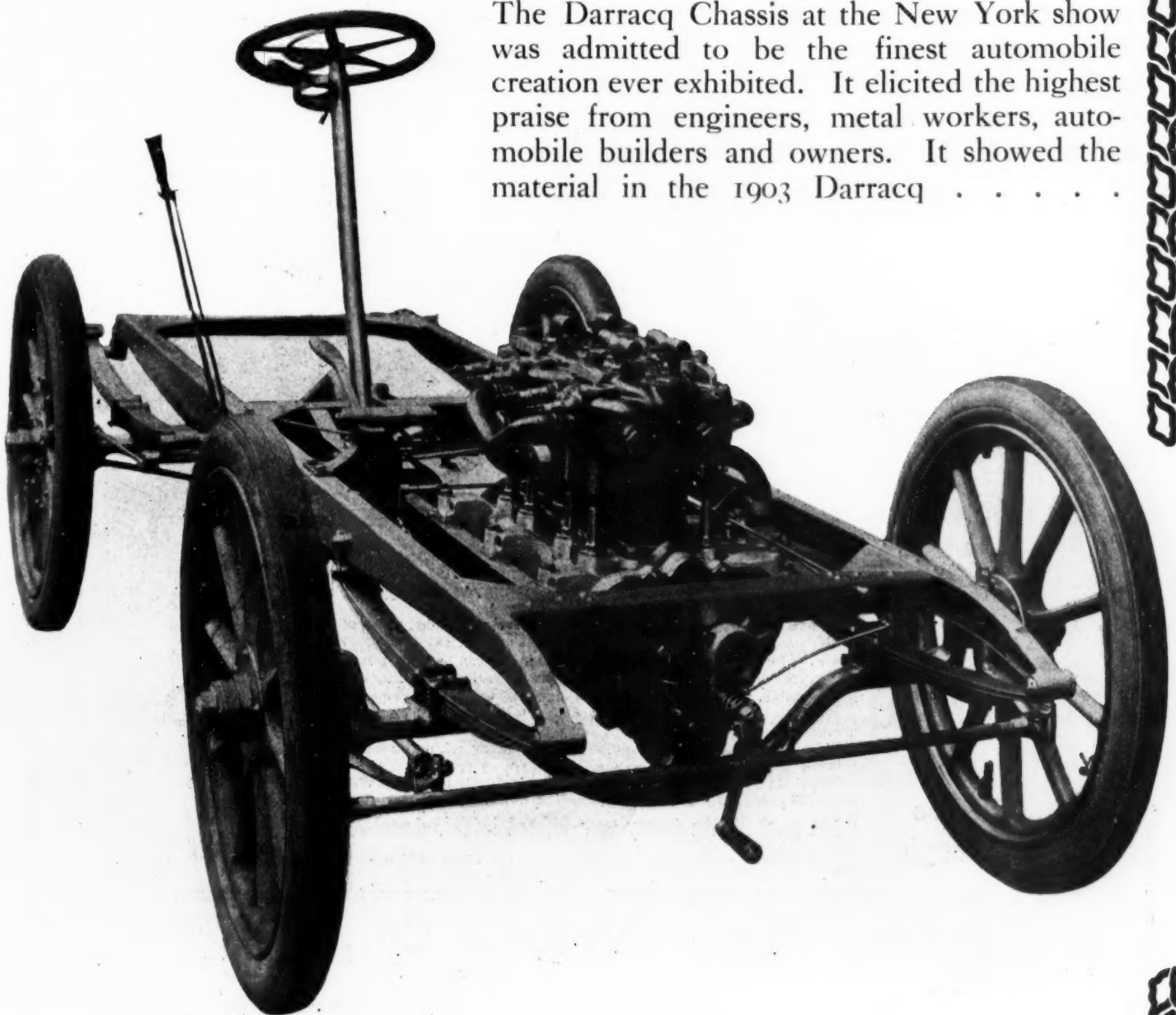
SPACES 183 & 184 AT THE CHICAGO SHOW

652 Hudson St., New York

THE DARRACQ

The Sensation of the New York Show

The Darracq Chassis at the New York show was admitted to be the finest automobile creation ever exhibited. It elicited the highest praise from engineers, metal workers, automobile builders and owners. It showed the material in the 1903 Darracq



American Darracq Automobile Co.

SPACES 183 & 184 AT THE CHICAGO SHOW

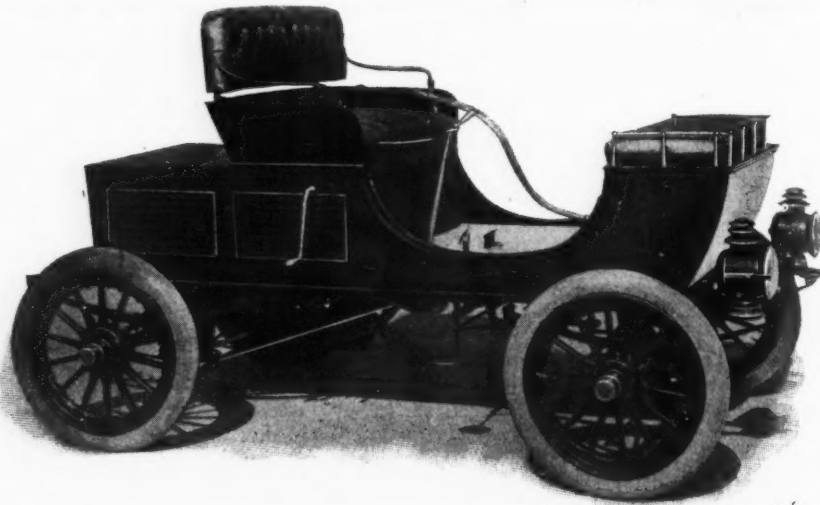
652 Hudson St., New York

THE CENTURY TOURIST GASOLINE CAR

IS THE MOST DISTINGUISHED AUTOMOBILE

EVER PRODUCED AND HAS IN ITS
ORIGINAL AND EXCLUSIVE DESIGN

...A TRADE MARK IN ITSELF...



The
Standard
Car

\$750

For
Two
People

THE POPULAR CENTURY TOURIST
Perfection in every detail :: Satisfaction to every purchaser

THIS car is equipped with a single cylinder water cooled motor of seven brake horse power at the wheels and carries enough fuel supply for a two hundred mile run. The motor can be started from the ground or seat, and with our new starting device a back kick is impossible. One lever controls two speeds forward and reverse, no gears running when high speed clutch is thrown in. The transmission and entire power equipment is readily get-at-able and the body can be removed from the steel frame by taking out eight bolts. Box front free for luggage. Has six foot wheel base. 28 inch Archibald artillery wheels. 3 inch Dunlop's detachable tires. Will run 25 miles an hour and is a marvel at hill climbing.

The most for the money ever offered in an Automobile.

Catalogue mailed free.

Order now for spring delivery.

With
Dos-a-Dos
Seat

\$800

For
Four
People

Century Motor Vehicle Co., SYRACUSE,
N. Y.

GENERAL AGENCIES:

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NEW YORK CITY, Banker Brothers, BROOKLYN, N. Y.: 488 Hancock Street, PROVIDENCE, R. I.:
PHILADELPHIA, PITTSBURG, Lewis Automobile Company, H. G. Martin & Co.
BUFFALO, N. Y.: 602 Main Street, ASBURY PARK, N. J.:
J. A. Cramer, A. A. Taylor Company.

GOODRICH CLINCHER AUTOMOBILE TIRES

Original American Clincher Leads

There were more Goodrich Clincher Double Tube Automobile Tires fitted to machines on exhibition at Madison Square Garden Automobile Show, Jan. 17-24, than any other individual make of Clincher Double Tube style of tire.

Important!

With hardly an exception, all machines at Show using OUR Clincher Tires were Heavy Touring Cars of High Power and Speed, requiring Tires of exceptional strength and quality. That is why Goodrich Clinchers were made the tire equipment. They have been thoroughly tested and their superior merits acknowledged. Write for booklet of testimonials, mailed to any one upon application.

Here is the Record

Winton Motor Carriage Company, . . .	4	Machines
White Sewing Machine Company, . . .	5	"
Peerless Motor Car Company, . . .	4	"
Pan-American Motor Company, . . .	3	"
Pope-Robinson Company, . . .	3	"
The F. B. Stearns Company, . . .	1	"
Packard Motor Car Company, . . .	1	"
Smith & Mabley, . . .	3	"
Berg Automobile Company, . . .	2	"
The Walter Car Company, . . .	3	"
Franklin Mfg. Company, . . .	2	"
The Shelby Motor Car Company, . . .	2	"
American Motor Car Company, . . .	2	"
Hoffman Automobile & Mfg. Company, . . .	2	"
Fredonia Mfg. Company, . . .	2	"
U. S. Long Distance Automobile Company, Locomo- bile Company, Geo. N. Pierce Company, Spaulding Motor Car Company, H. P. Hall Motor Company, Moyea Automobile Company, one machine each. Baker Motor Vehicle Company, 6 machines, ALL fitted with Palmer Special Speed Automobile Tires, OUR Make.		
Ajax Motor Company, 2 machines, fitted with Good- rich Single Tube Motor Tires.		

RECAPITULATION

Goodrich Clincher Tires equipped . . .	47	Machines
Palmer Special Tires equipped . . .	6	"
Goodrich Single Tube Tires equipped . . .	2	"
	55	

Total, 55 Machines

THE B. F. GOODRICH COMPANY

Factories, - Akron, Ohio

BRANCHES:

NEW YORK, 66-68 Reade Street
CHICAGO, 141 Lake Street
SAN FRANCISCO, 392 Mission Street

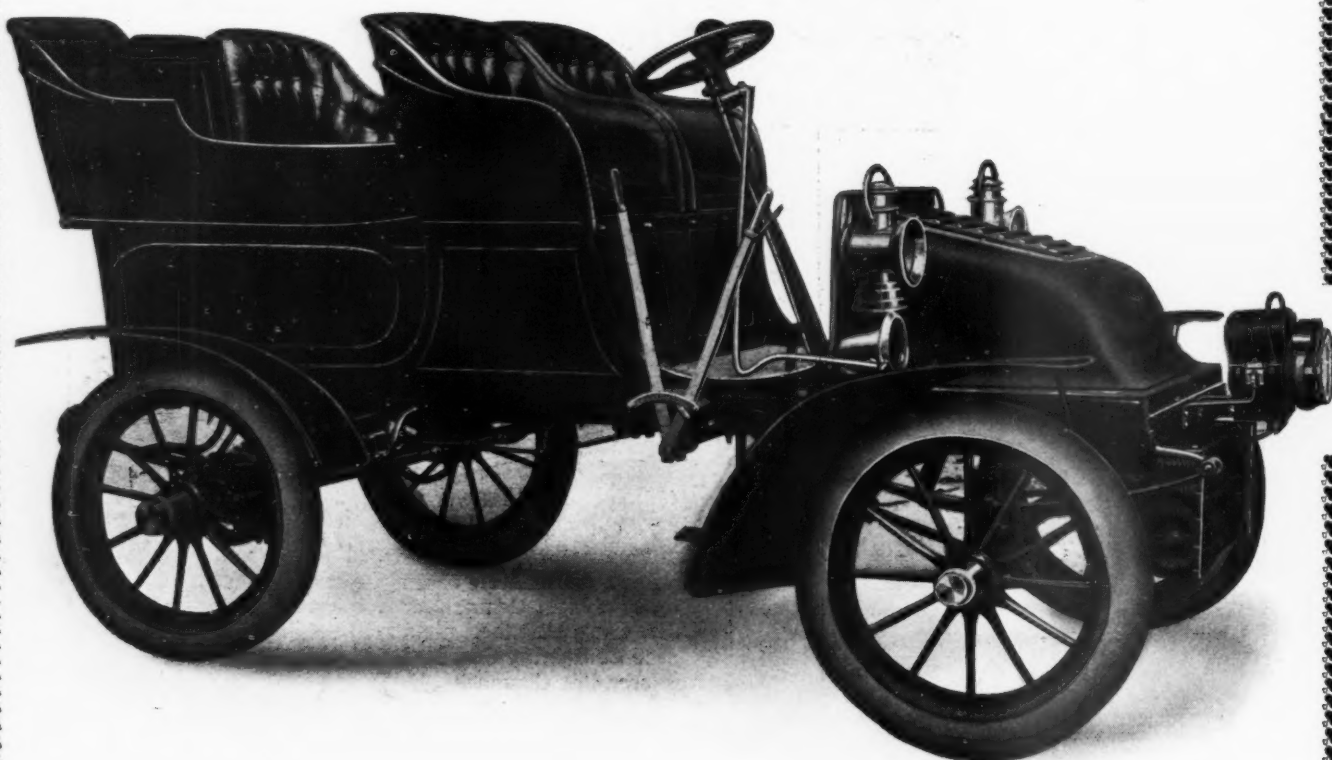
PHILADELPHIA, 922 Arch Street
DETROIT, 80 E. Congress Street
BUFFALO, 9 West Huron Street

DENVER, 1444 Curtis Street
BOSTON, 157 Summer Street
LONDON, ENG., 7 Snow Hill, E. C.

The Cleveland



For style, power, comfort, reliability, hill climbing, rough road work—equal to the cars of twice the price. In ease of care and control, expense of maintenance, accessibility of parts, simplicity of construction and general utility, it is without a peer. ♣ ♣ ♣ ♣ ♣



PRICE \$1750, F. O. B., CLEVELAND



Strong armoured wood frame; heavy artillery wheels; deep divided front seat; roomy detachable tonneau; extraordinarily elastic springs; double opposed cylinder horizontal motor; strong, simple, fool proof sliding gear transmission, three speeds forward and one reverse, direct on high speed; solid live rear axle; all year round carbureter; best upholstery and finish. ♣ ♣ ♣ ♣ ♣



THE CLEVELAND AUTOMOBILE CO.

16, 18 and 20 Lake Street, Cleveland, Ohio, U. S. A.

THE CLEVELAND ROADSTER



A Runabout of a larger growth; stronger,
more durable, more powerful, more comfortable.
Just as simple and just as easy to operate.



PRICE, \$750, F. O. B. CLEVELAND



Rectangular reachless frame; long springs;
single cylinder motor; transmission without
internal gears; three independent brakes; solid
live rear axle; artillery wheels; detachable tires;
wide, comfortable seat; highest possible finish.



THE CLEVELAND AUTOMOBILE COMPANY

16, 18 and 20 Lake Street, Cleveland, Ohio, U. S. A.

...THE...
GENERAL



The 1903 General Runabout represents all that is best in up-to-date automobile manufacture. Strong, durable, reliable, handsome. It possesses speed and power to climb hills. Propelled by an 8 horse-power Double Cylinder Gasoline Engine. No vibration—no odor—no dirt ♣ ♣ ♣ ♣ ♣

See Our Exhibit
at the
Chicago Show

New
Illustrated
Catalogue Ready

The General Automobile Mfg. Co.

CLEVELAND, OHIO

Agents in Principal Cities

The OLDSMOBILE

THE CAR WITH A RECORD



The satisfactory service of this world-standard runabout means more than all the claims of its imitators. Seven thousand machines in daily use for the past three years prove more than the theoretical arguments and experimental efforts of the manufacturers who have yet to prove they are able to build a machine capable of standing a season's use. The Oldsmobile is built to run and DOES it.

The development along the most practical lines of this mechanical marvel marks the most advanced stage of automobile construction, and keeps the Oldsmobile "the best thing on wheels."

PRICE, WITH MUD GUARDS, \$650

Each working part is as simple as skill can devise, as strong as the best drop materials can make it, and as efficient as mechanical perfection can produce. There is nothing problematical in the Oldsmobile.

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Oldsmobile Company, Los Angeles, Cal.
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H. B. Shattuck & Son, Boston, Mass.
Banker Bros. Co., Pittsburg, Pa.
Oldsmobile Co., Cleveland.
Oldsmobile Co., Githens Bros. Co., Chicago.
Fisher Automobile Co., Indianapolis, Ind.
Olds Gasoline Engine Works, Omaha, Neb.
W. C. Jaynes Auto. Co., Buffalo, N. Y.
F. L. C. Martin Co., Plainfield, N. J.
Autovehicle Co., Newark, N. J.
F. W. Stockbridge, Paterson, N. J.

Mississippi Val. Auto. Co., St. Louis, Mo.
George E. Hannan, Denver, Colo.
Day Automobile Co., Kansas City, Mo.
Clark & Hawkins, Houston, Tex.
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John W. Chester Co., Nashville, Tenn.
A. F. Chase & Co., Minneapolis, Minn.
J. E. Richard, Columbus, S. C.
Oldsmobile Co., Milwaukee, Wis.
Rochester Auto. Co., Rochester, N. Y.
Seager & Close, Tucson, Ariz.

F. E. Gilbert, Jacksonville, Fla.
Texas Imp. & Machine Co., Dallas, Tex.
Abbott Cycle Co., New Orleans, La.
C. H. Johnson, Atlanta, Ga.
Sutcliffe & Co., Louisville, Ky.
Brown-Thompson & Co., Hartford, Conn.
Mason's Carriage Works, Davenport, Ia.
Adams & Hart, Grand Rapids, Mich.
Kline Cycle & Auto Co., Harrisburg, Pa.
The Oldsmobile Co., W. C. Rands Co., Managers, Detroit, Mich.
Oldsmobile Co., Mohler & DeGress, Mexico City, Mexico.

Agency for Great Britain, The Oldsmobile Company of Great Britain, 100 C Queen Victoria St., London, E. C.

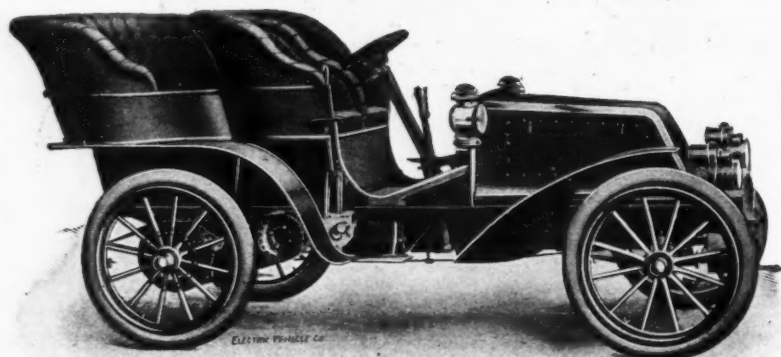
Write for Information and Illustrated Catalogue, to

OLDS MOTOR WORKS,
1300 Jefferson Ave.   **Detroit, Mich.**

Columbia Automobiles

New Models for 1903

24 H. P.
Columbia
Gasoline
Touring
Car



Most
Efficient
and
Hand-
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American
Car

A thoroughly American machine for American roads. All parts of engine and running gear instantly accessible. All parts interchangeable. All screws and bolts have standard threads. Noiseless running. Drop forgings throughout. 4-cylinder vertical water cooled engine. Through drive on high gear. Single lever for all speeds. Four speeds forward and one reverse. Speeds four to forty-five miles per hour. Two double acting brakes. New style Tonneau body, seating five persons. All body furnishings and fittings of COLUMBIA quality.

**Columbia
"Seabright"
Runabouts,
Victorias,
Surreys,
Tonneaus,
Cabriolets,
Opera Busses
and Broughams**

Which were so unqualifiedly successful during 1902, have been perpetuated with numerous improvements.

See Our Exhibit at
Chicago Show

The COLUMBIA line for 1903 includes the following new vehicles

Columbia Light Electric Runabout

New form of Underslung Battery, leaving body entirely open.

Columbia Rear Driven Coupe

Containing distinctive features of both the Brougham and Hansom types.

Columbia Inside Operated Coupe

Dispensing with necessity for separate driver. Especially desirable for Physicians.

Columbia Special Delivery Wagon

For inspectors, superintendents, fire and police chiefs, and others requiring high-powered electric automobiles for hard service.

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Entirely new models containing many exclusive features, adapted to all kinds of commercial uses.

Catalog Will Be Sent on Request, Also Special Bulletins With Complete Detailed Information for Each Vehicle Separately

Electric Vehicle Company, HARTFORD, CONN.

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The STEARNS CAR DID MAKE A HIT



For General Appearance, Style and Finish

A quiet running motor with a perfect throttling device. A three speed transmission that is right, and all parts easy of access for all adjustments. The arrangement of attachments on the dash and controls at the steering wheel also found favor with all. The new Radiator with tanks for 200 miles running is a step in advance. Think it over seriously. IT IS THE CAR TO BUY.

THE F. B. STEARNS CO., Cleveland, O.

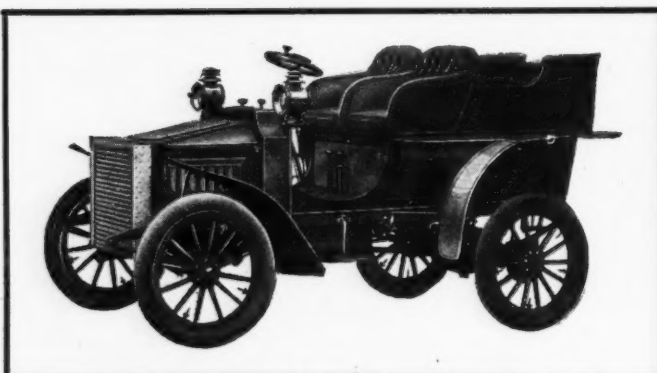
Cadillac Auto Co. of Illinois, 1312 Mich. Ave., Chicago, Western Distributors

White Steam Touring Car

FOR 1903

Is a Steam Car of Chassis Construction with the Distance of a Gasoline and the Ease of Operation of an Electric

TO the principle of producing great power and wasting practically none of it is due much of the success of the **White**, which of all automobiles has to its credit four first awards in the New York - Rochester endurance test of 1901; four first awards in the New York - Boston - New



York reliability run of 1902, and its perfect scores for reliability in the great English 650-mile reliability trials of 1902. But one other car achieved this distinction in the English Trials. These marvelous triumphs may be taken as an accurate criterion of the "White's" supremacy.

SPECIFICATIONS

Price, \$2,000

SEATING CAPACITY	Four	TREAD	4 ft. 8 in.	EXTREME LENGTH	10 ft.
RATED HORSE-POWER	Ten	WHEELS	30 inches	EXTREME WIDTH	5 ft.
ENGINE	Compound	TIRES (Goodrich Clincher)	4 in.	EXTREME HEIGHT	5 ft. 2 in.
WHEEL BASE	6 ft. 8 in.	WEIGHT (Tanks filled)	1,600 lbs.	CAPACITY GASOLINE TANK	10 gals.
		CAPACITY WATER TANK	15 gals.		

Condenser, Two Independent Set of Brakes, Automatic Cylinder and Engine Lubricator.
Equipment—Condenser, Side Lamps, Set of Tools, Horn, Tool Case.

SUCCESS in every-day use, in reliability contests, in races, and in record trials, has proved the "White" system of motive power to be the most noteworthy achievement of automobile developments. The 1903 "White" is equipped with every improvement which our experience has shown would be of advantage to the car. Greater power and economy, and greater ease of operation, combined with noiselessness has always characterized it.

These advantages are secured by means of a compound engine, the "White" special condenser, a chainless drive, automatic cylinder and engine lubrication, two independent sets of brakes, and a variety of minor improvements, which assure the "White" purchaser that his vehicle possesses a system of producing and conserving energy unexcelled in the automobile realm.

Safety is the "White" keynote. The "White" as is now well understood, has no boiler, and a boiler explosion is therefore impossible. The power of the "White" car is produced in a generator, in which the possibility of accident is non-existent.

The working parts being entirely encased, the "White" is impervious to mud and dust; while its operating parts are so arranged that a lady need have no fear of soiling even a glove in running the car.

WHITE SEWING MACHINE COMPANY

(Automobile Department) CLEVELAND, OHIO

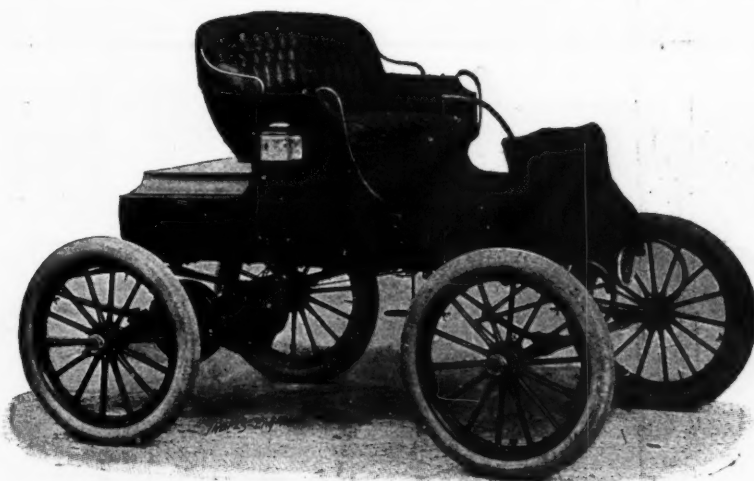
22 Union Square, New York
509 Tremont Street, Boston, Mass.
300 Post Street, San Francisco, Cal.
212 Woodward Avenue, Detroit, Mich.

609 Main Street, Buffalo, N. Y.
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AN OPEN LETTER

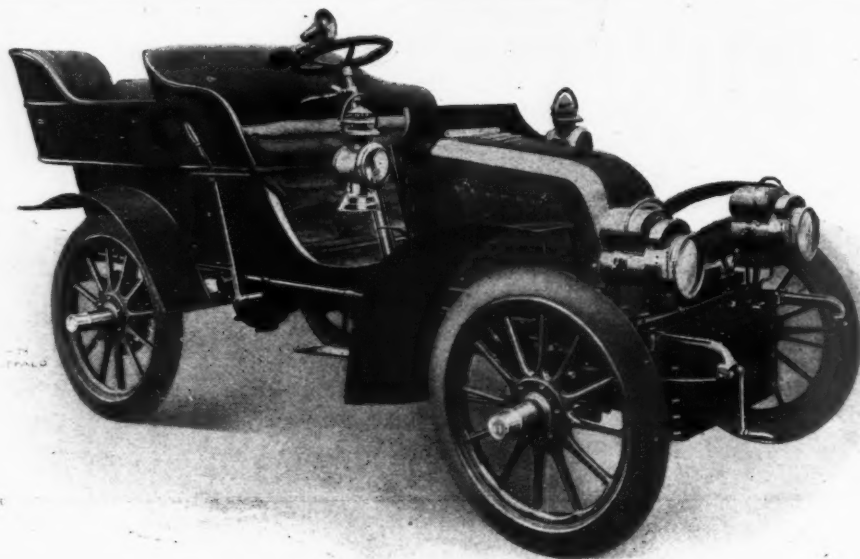
To Automobile Dealers:

You are in the business to make money. Your profits depend upon Automobiles sold by you in your territory. Why confine your selling efforts to any one kind of power? All powers have their advantages. The Electric embodies many features of practical worth with a minimum of trouble. NATIONAL ELECTRICS represent that which is best in the Electric field. To add our line, you are only showing good business judgment. Electrics are going to sell. Why spend your time talking other powers when a customer wants a NATIONAL? The National agency will prove to be a most valuable asset and money maker. Think it over and write us about our prices, terms and catalogues.

NATIONAL MOTOR VEHICLE CO.

1200 East 22d Street, Indianapolis, U. S. A.

"The Cadillac Automobile Co., of Illinois,
1312 Michigan Ave., Distributors for the
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ARROW MOTOR CAR.

Pierce Motorettes

Built to Run All the Time!

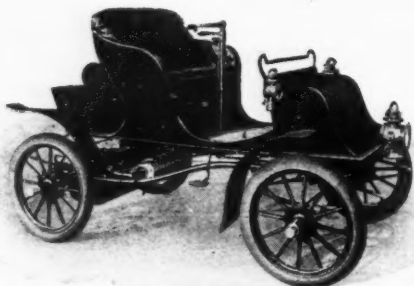
New Models for 1903 will be exhibited at the Chicago Automobile Show, Spaces 11 and 12.

Arrow Motor Car

Includes all the latest improvements in Moderate Speed, Moderate Weight, and Moderate Price Tonneau Models.

SIMPLE IN OPERATION, UNEQUALLED IN WORKMANSHIP AND FINISH, ELEGANT IN DESIGN.

THE GEORGE N. PIERCE CO. Makers,
BUFFALO, NEW YORK.



PIERCE MOTORETTE

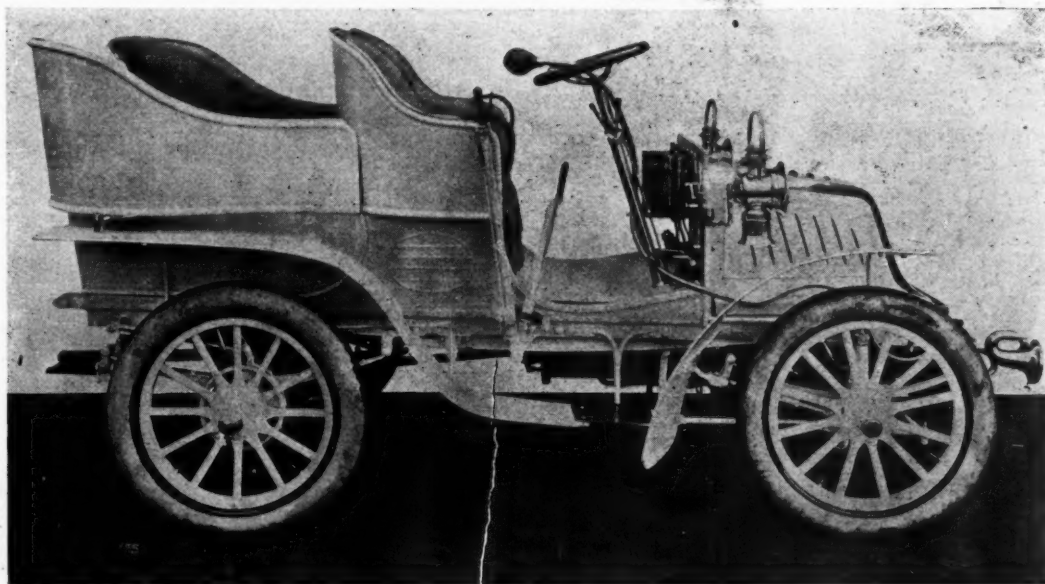
GENERAL SELLING AGENTS:

Banker Bros. Co.	} New York. Philadelphia. Pittsburg.
Automobile Headquarters, Boston.	
Miller-Mundy Motor Car Co., Utica, N. Y.	
R. W. Whipple, Binghamton, N. Y.	
Conrad Bros., Scranton, Pa.	
Toledo Motor Carriage Co., Toledo, Ohio.	
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E. P. Moriarity & Co., Kansas City, Mo.	

They All Wanted German Ideas

So said all dispatches and editorials on the Paris show. The French maker now knows that the German is ahead in construction.....

A high class German car **THE CUDELL**



Noiseless, One, Two and Four Cylinder Types. 6 and 8 H. P. Motorette, Three Speeds and Reverse. 12 and 16 H. P. Tonneaus, Four Speeds and Reverse. Chainless. We Invite Inspection. Instruction Given to Intending Purchasers. Compare Our Prices With Others. All Duplicate Parts In Stock.

Full Cars, Single Lever Control, Double Suspension. Trucks and Delivery Vans.

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Garage, The Motor Vehicle Repair and Storage Co., 121-123 West 31st St., New York.
Storage and Supplies. :: Agents Wanted Everywhere.

Locomobile



THE NEW 9 H. P. GASOLENE LOCOMOBILE

This car has all the novel features of the 16 h. p. Locomobile, such as the Throttle on Steering Wheel; Valves easily removed and replaced; Kerosene Pump; Slide Gear Transmission; also the Steel Chassis Construction, which makes it possible to attach any desired style of body.

WRITE FOR FULL DESCRIPTION

THE *Locomobile* COMPANY OF AMERICA

New York Salesroom: Broadway Cor. 76th Street.

Factory: Bridgeport, Conn.

Branches in Chicago, Philadelphia, Boston, London and Paris.

A Few Out of Many.

HINSDALE SMITH, Pres.

ARTHUR PARKS SMITH, Sec. and Treas.

The Automotor Co.

Telephone 304-4
P. O. Box 1073
Cable Address: "Automotor"
2. S. C. Code

Springfield, Mass. Oct. 20, 1902

Mr. W. H. Kirkpatrick
Hartford Rubber Works Co.
Hartford Conn.

Dear Sir,

We thought it might be of interest to you, to learn, that the car we ran in the New York-Boston Reliability Run #65, was equipped with Dunlop tires, that we had no trouble with them on the run. The tires had been previously run about one thousand miles and we took the car from Hartford Conn. to New York, went all through the contest and returned to Hartford without even pumping up the tires.

Yours very truly

Automotor Co.

Arthur P. Smith

John A. Hill
Pres. and Treas.
Hill Publishing Company
General Offices: World Building, New York, Works, 218 William Street, Cable "Mechanic", N.Y.
Publishers: Publishers of American Machinist Weekly, POWER Monthly.
Printers.
Engravers.

Oct. 25, 1902.

The Hartford Rubber Works Co.,
Hartford, Conn.

Gentlemen:--

The Contest Committee of the Automobile Club of America used my Tonneau Autocar as the Committee's car on the recent reliability run, New York to Boston and return.

My car had been run about 100 miles on a set of Dunlop tires of your make before it started for Boston. It undoubtedly had the hardest usage of any car in the run, because, we saw the entire line of contestants off in the morning, and at noon, passed them on the road, and saw them arrive. Besides this the car was run for other purposes in Boston and at other controls, making from the time it left my house until its return 606 miles. The car only weighs 1400 pounds and it carried four men weighing 745 pounds.

We never touched the tires from start to stop except in one instance, when the car stood on a side hill and it looked as if one of the back tires was partly deflated. We put on the pump and tried to pump it up but could not. The tire was all right. The car came home without a single stop for tire trouble and is ready for further business.

I write this voluntary letter, because I must say I was a little skeptical about the tires on this run, with this load, and to guard against troubles carried two extra shoes and a box full of inner tubes, which are still waiting for a failure.

Very truly yours,

John A. Hill
of Contest Committee.

EUROPEAN OFFICES:
Chambers, 23 Theatre Street,
Manchester, 66 Foulton Street,
Paris, 3 Cité Turenne,
St. Gall, 9 Benengarten Strasse.

NEW YORK OFFICE:
2 Walker Street.

Brown, Thomson & Co.

Hartford, Conn. Nov. 5, 1902.

Hartford Rubber Works Co.,
CITY.

Gentlemen:--

We thought it might interest you to know our experience with the Dunlop Tires in our Automobile Dept.

You may remember at the commencement of the season when specifying these for some of our different Autos, some of the men in our Department were somewhat skeptical in regard to the results.

We specified Dunlop tires on about one-third of our vehicles and have been watching the results with a great deal of interest, as in former seasons we were in constant trouble on account of the tires. Now at the close of the season we must say we are more than pleased with the results we have obtained from the Dunlop Tires and according to our ideas, and experience they are the only practical tires for an Automobile at the present time. We find they are giving excellent satisfaction and our customers by carrying along an extra inner tube can always make a quick and permanent repair on the road with very little trouble. This is something we cannot say of any single tube or any other make of inner tube tires we have had experience with. We shall surely insist upon having all of our Automobiles for next season equipped with Dunlop Tires.

Yours truly,

Brown, Thomson & Co.

W. L. L.

FOURNIER-SEARCHMONT
AUTOMOBILE COMPANY
NORTH AMERICAN BUILDING
PHILADELPHIA, U. S. A.

10038

Searchmont.
AUTOMOBILES

Oct. 21/02.

Hartford Rubber Co.,
Hartford, Conn.

Gentlemen:--

We are in receipt of your esteemed favor of the 18th, asking us what success we had with your tires on the Searchmonts 42 C, 67 C and 76 C, in the Reliability Run, all of which were fitted with Dunlop 3 1/2 x 32 inch tires.

We are very glad to be able to tell you that we had no trouble whatever with them, and you will find from the observers' records that not a single stop was made for tire difficulties of any kind. This is certainly a great record for your tires, and one of which you may be justly proud.

Yours very truly,

Fournier-Searchmont Automobile Co.

no cash

Sales Manager.

A Few Out of Many.

John Wanamaker

Philadelphia:
City Hall Square
Paris
44 Rue des Petits Champs

Broadway, 4th Ave. 5th and 10th Sts.

New York, Oct. 24th, 1902

Hartford Rubber Works Co.,
Hartford, Conn.

Mr. H. Kirpatrick,

Dear Sir:-

As an aftermath of the endurance run held under the auspices of the Automobile Club of America, I think it only just to yourselves to tell you that the Searchmont cars entered by our House were fitted with Dunlop tires; there were three of these machines entered in the run and all three drove from N. Y. to Boston and return without so much as attaching a pump to the valve on the tires, and it also may interest you to know that the tires were as clean and as free from cuts and signs of wear at the finish, as any tires which went through that 500 mile run. The ~~quest~~ statement of the fact is more interesting to you than any comments which I could make on the subject, so I will leave that part for you to do as you may see fit.

Thanking you for supplying us with so good a tire on this run, we remain

Yours very truly,

JOHN WANAMAKER.

per

R. A. Murray
AUTOMOBILE DEPT

(MH)

John Wanamaker
City Hall Square,

Paris
44 Rue des Petits Champs
38--B--E.

Philadelphia, October 20, 1902

The Hartford Rubber Works Comp
Hartford, Conn.

Dear Sirs:-

Replying to yours of the 18th inst., asking us for our opinion of your "Dunlop" tires, would say that we cannot speak too highly of the good services they gave us in the recent "Reliability Run".

We had entered in this run two Searchmont cars, and the Boston agent also had one Searchmont in the run. All three cars were equipped with your latest style of "Dunlop" tires 32 x 33-1/2, and all three came through without a single puncture or stop of any kind on account of tires or anything else. All the tires seemed to be in very good shape and look as though they could stand another run with just as little trouble

Congratulating you on your success, we are,

Yours truly,

JOHN WANAMAKER.

Wanamaker

ALBERT E. SMITH, President

H. A. KNOX, Vice President

E. H. CUTLER, Treasurer

KNOX AUTOMOBILE COMPANY

TELEGRAPHIC & CABLE ADDRESS
"KNOXMOBILE"
CODE, WESTERN UNION

Springfield, Mass. Oct. 20, 1902

Hartford Rubber Works Co.,
Hartford, Conn.

Gentlemen:-

Yours of the 18th received and we are pleased to state that our two vehicles, which successfully completed the New York to Boston Reliability Contest were equipped with Dunlop tires. We had no trouble with them of any sort, no punctures, and did not even blow them up throughout the run. As far as we could judge they were in as perfect condition at the finish as they were at the start.

Yours truly,

Knox Automobile Co.

Dict. H. A. K.

Wadnot

ALBERT E. SMITH, President

H. A. KNOX, Vice President

E. H. CUTLER, Treasurer

KNOX AUTOMOBILE COMPANY

TELEGRAPHIC & CABLE ADDRESS
"KNOXMOBILE"
CODE, WESTERN UNION

Springfield, Mass. Nov. 25, 1902

Hartford Rubber Works Co.,
Hartford, Conn.

Gentlemen:-

We have used your Dunlop tires, 30 x 3", exclusively on about 300 of our vehicles this year, and are pleased to state they have proved very satisfactory to us and to our customers. We believe they are the easiest riding double tube tire on the market today.

Yours very truly,

Knox Automobile Co.



TELEPHONE, 6884-3874

THE OLDSMOBILE CO.

138 WEST 38TH ST

New York, Oct. 24, 1902.

Hartford Rubber Works, Co.,
Hartford, Conn.

Gentlemen:-

I wish to thank you for your congratulations on our success in the Endurance Contest and wish to say that we qualified for the President's Cup. The Dunlop Tires on both of the Oldsmobiles which entered the Run, came through without any trouble whatever, and as for A 64 would say that these tires were not even inflated during the Run. We are still using these tires and so far they are giving excellent satisfaction.

Very truly yours,

OLDSMOBILE COMPANY.

Mowen

LANE MOTOR VEHICLE COMPANY

MANUFACTURERS OF
AUTOMOBILES

W.J. LANE, Pres.
GEO. LANE, Treas.
J.M. JAMES, Secy.

Poughkeepsie, N.Y. Oct. 20th, 1902.

Hartford Rubber Works Co.,
Hartford, Conn.

Gentlemen:-

As you are already aware two of our carriages in the recent Automobile Endurance Contest from New York to Boston and return were equipped with your single tube Hartford Tires.

The exceptionally fine record of our machines necessarily speaks well for your goods, and we will add that our operators are unanimous in saying that if they were equipped for another Non-Stop Contest run under the same rules and regulations they would surely choose Hartford Single Tube Tires.

Yours truly,

J. M. James

Dict. by G. L.

H. B. SHATTUCK & SON
AUTOMOBILES
339 COLUMBUS AVE. BOSTON, MASS.

Boston, Mass., Oct. 20, 1902.

Hartford Rubber Works,
Automobile Dept.,
Hartford, Conn.

Gentlemen:-

We are pleased to inform you of the very satisfactory results obtained from our three cars in the Endurance Contest, all fitted with Dunlop tires. These three cars went through without any tire trouble whatsoever. This, we assure you, is very pleasing to us, and we think will be of interest to the general public. We have been using Dunlop tires now for the past year on our Autocars and have found them very satisfactory and reliable.

Yours truly,

H. B. Shattuck & Son,

Per Benj. Smith, Mgr.

N. J. AUTOMOBILE CO.,
GENERAL AGENTS,
No. 8 Central Avenue,

Newark, N. J., Oct. 20, 1902.

THE HARTFORD RUBBER WORKS CO.

Hartford, Conn.

Dear Sirs:-

It affords me great pleasure to inform you that I acted as observer for Mr. A. P. Smith, who operated an Automotor made in Springfield, Mass. This machine was fitted with Dunlop Tires which gave us absolutely no trouble during the late New York and Boston Endurance Test. I also wish to state that at no time during the trip did I see any contestants that were using your tires in trouble.

Yours very truly,

L. S. W.

Dict.
L. S. W.

DURVEA POWER COMPANY, INCORPORATED

MAKERS OF
AUTOMOBILES, MOTORS, LAUNCHES.

N. River and Hookley Streets,
READING, PA. Dec. 17, 1902.

Hartford Rubber Wks., Co.,
Hartford, Conn.

Gentlemen:-

Sometime ago we reported on a set of Dunlop tires driven by us in the run from Reading to Boston and return, accompanying the Reliability contest. We have since run those tires another thousand miles and had no trouble of any kind with them. They were pumped up at 1750 miles for the first time since leaving the factory. Their light weight, easy riding qualities and splendid service on our light weight vehicles please us very much, as you will readily understand.

Very truly,

DURVEA POWER CO.

C. E. Durvea
V.P.

CED/EAR.

Dict. B. S.
J. E. B.

DURVEA POWER COMPANY, INCORPORATED

MAKERS OF
AUTOMOBILES, MOTORS, LAUNCHES.

N. River and Hookley Streets,
READING, PA. Oct. 25, 1902.

Hartford, Rubber Wks. Co.,
Hartford, Conn.

Gentlemen:-

It may interest you to know that we used Dunlop tires 30" and 36" x 3" on our three wheeled phaeton, which we drove from Reading to Boston and return accompanying the New York-Boston Reliability contest. We covered with this vehicle 1100 miles, 1000 being made in ten consecutive days and had no tire troubles whatever. Further the tires showed no abuse and very little wear. We are using several other kinds of tires but pin our faith to Dunlops.

Very truly,

DURVEA POWER CO.

C. E. Durvea
V. P.

CED/EAR.

N. J. AUTOMOBILE CO.,
GENERAL AGENTS,
No. 8 Central Avenue,

Newark, N. J., Oct. 21, 1902.

Mr. W. W. Kirkpatrick,

1 Hartford Rubber Works Co.,
Hartford, Conn.

Dear Sir:-

It was my good fortune to be a guest on the recent Reliability contest to Boston and return. Part of the time I rode with Mr. Shattuck and the balance on the Committee car. This gave me unlimited opportunities for investigating the different cars. As we were almost always the last to start and the first to finish, passing all the contestants en-route; it affords me much pleasure to congratulate you heartily in the way your tires stood up. While we met with lots of victims of tire troubles, in no case did I see anyone repairing Dunlops.

With kind regards,

Yours very truly,

W. W. Kirkpatrick

Dict.
W. J. S.

G & J TIRES

Make the most practical and satisfactory automobile equipment. They will stand hard service; are resilient and speedy; easily repaired if punctured—and they don't puncture easily.



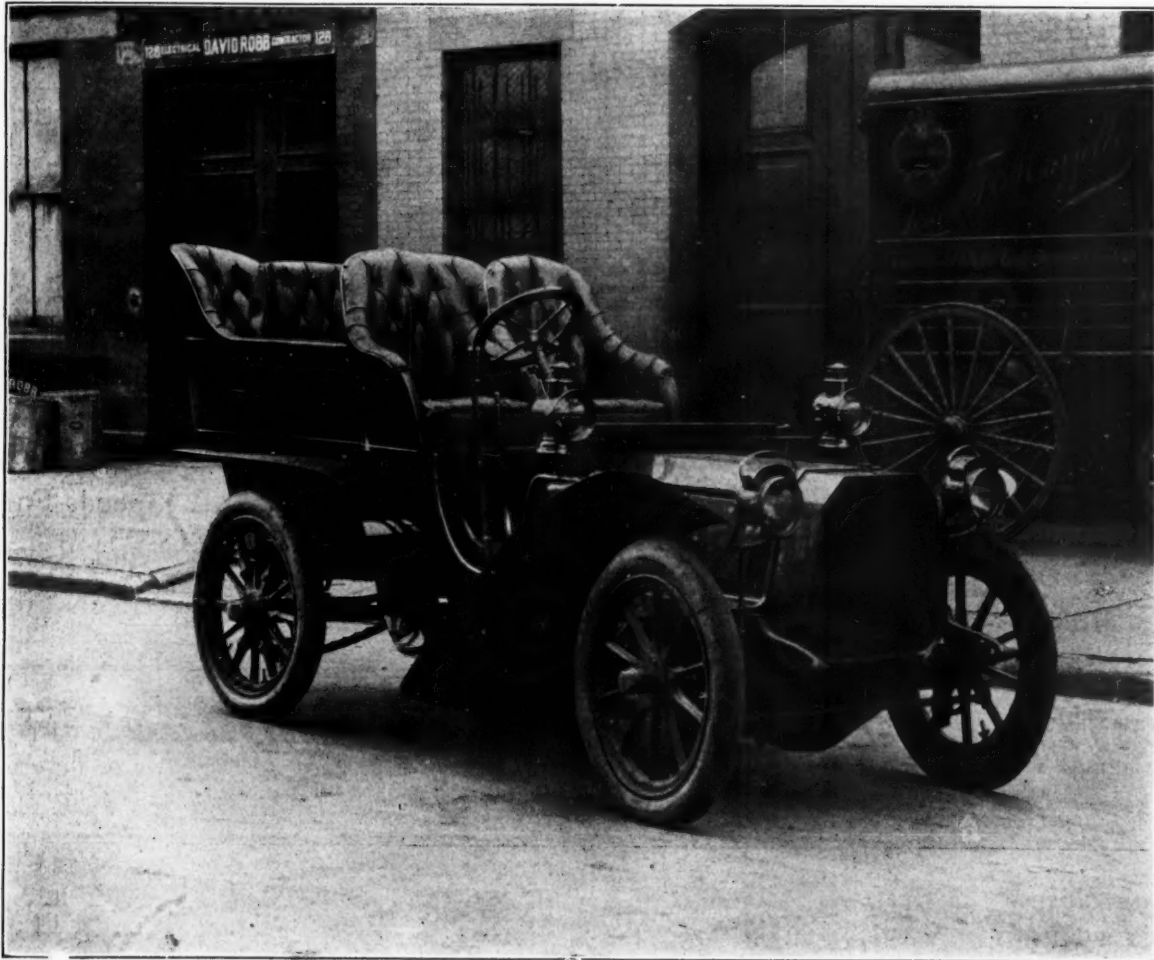
Detachable tires are being adopted by all automobile makers for 1903. G & J automobile tires stand at the head of the class as reliable tires of unquestioned quality.

Chicago Show: Feb. 14-21.
SPACES 144-145.

G & J TIRE CO.

INDIANAPOLIS, IND., * * * U. S. A.

A SHOW FAVORITE



THE MOYEA TOURING CAR

Met with instantaneous approval from experts and the general public. The powerful motors, beautiful workmanship, and finish, high grade material and simplicity of mechanical design makes the machine the center of interest.

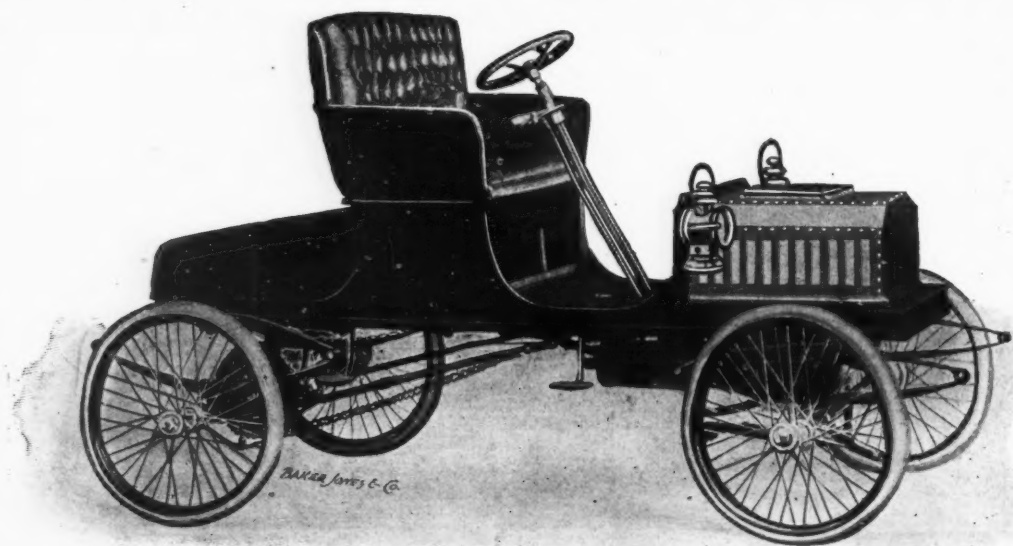
PRICE \$5,000.

Deliveries in early Spring.

Moyea Automobile Co., 3 West 29th St., New York.

CONRAD GASOLINE.... AUTOMOBILES

The Feature of the New York Show



CONRAD GASOLINE RUNABOUT, \$750.

Eight-Horse Power
Vertical
Double Cylinder
Engine in Front.



Sliding Gear
Transmission; Two
Speeds Forward
and Reverse;
Wheel Steering.

See Them at Chicago Automobile Show

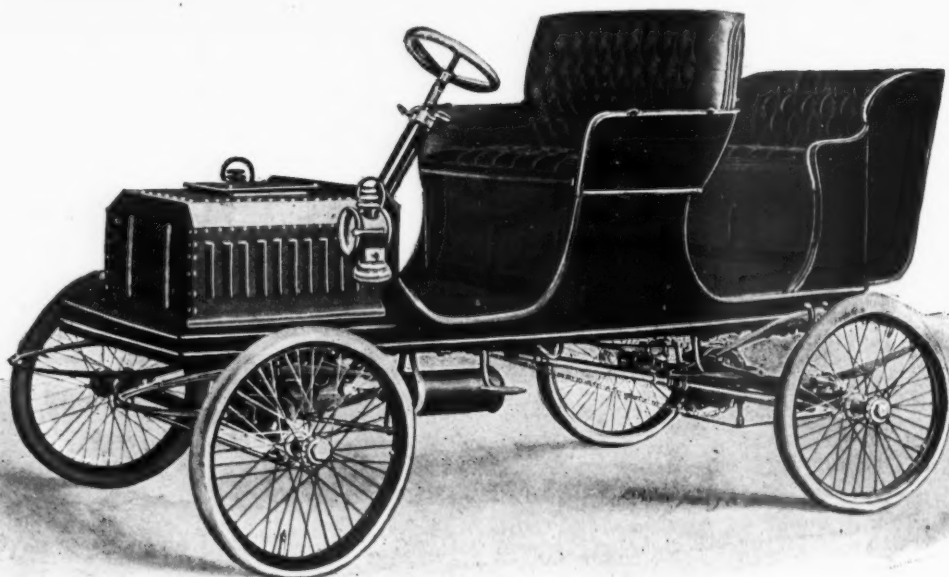
SPACES 112 - 113

When closed
looks like a Run-
about, as in first
illustration.

When open
presents a com-
fortable surrey
seat for two people



Conrad Gaso-
line Touring Car
with Tonneau,
price \$1250 will
be shown in next
issue Motor Age.



Conrad Gasoline Runabout, with Disappearing Surrey Seat (Open) Price \$850

CONRAD MOTOR CARRIAGE CO.

1413-1419 Niagara Street

♠ ♠ ♠ ♠ ♠ BUFFALO, NEW YORK

HERE IS ONE....

That Agents Cannot Afford to Overlook

THE

SANTOS - DUMONT

CAN BE SEEN IN SPACES 118 AND 119
SOUTH END OF BUILDING



Price, - \$1,800

Agents who are unable to get to
the show write us and we will
tell them all about it ∴ ∴ ∴

MANUFACTURED BY THE

COLUMBUS MOTOR VEHICLE CO.
COLUMBUS - OHIO

DIAMOND TIRES

HOLD World's Record ONE TO FIVE MILES

Barney Oldfield on December 1, 1902, at Grosse Pointe Race Track lowered the world's one-mile automobile record for a circular track to 1:01 $\frac{1}{2}$ and the five-mile record to 5:20. This one-mile record is 1.3 seconds and five-mile record is 8 seconds under previous world's record.

ABOVE RECORDS WERE MADE UPON

Diamond Detachable Tires

(Continental Type)

Tires used were from regular stock and have been in constant use since June. We claim and these records are PROOF CONCLUSIVE that

DIAMOND TIRES

are reliable and 20 per cent more resilient than any other tire made

BRANCHES:

NEW YORK
BOSTON
PHILADELPHIA
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ST. LOUIS
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BRANCHES:

DENVER
SAN FRANCISCO
CLEVELAND
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WASHINGTON
ATLANTA

The Diamond Rubber Co.

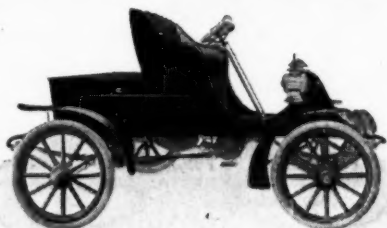
AKRON, OHIO

CHICAGO SHOW:
Spaces 47-48 Coliseum

YOU NEED IT IN YOUR BUSINESS

CHICAGO SHOW:
Spaces 47-48 Coliseum

The Elmore Automobile....



is the most simple, practical and reliable car ever put on the market. It is propelled by the famous Elmore motor, whose two cylinders have fewer parts than a single cylinder of any other type.

Either engine will propel carriage should the other be cut out. (A very important fact.)

Has dynamo and storage battery. Motor will start and carriage will run on either. (Another important fact.)

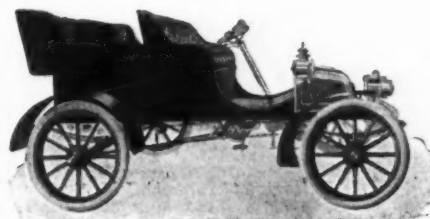
You can charge the battery from the dynamo while running the carriage, which is another important fact.

Has had a practical test of over three years' manufacture.

Two first-class certificates in New York-Boston Endurance Run. Have been used in 1000-mile tours without trouble. And still more important facts.

Doctors' and Business Men's favorite car, Model 7, \$800

Tonneau Touring Car, Model 8, \$1400



.....LOOK UP! WRITE! INVESTIGATE!

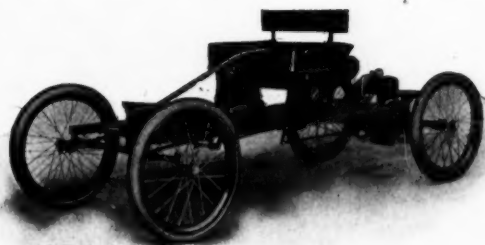
ELMORE MANUFACTURING COMPANY

Member of National Association
of Automobile Manufacturers. . .

Clyde, Ohio

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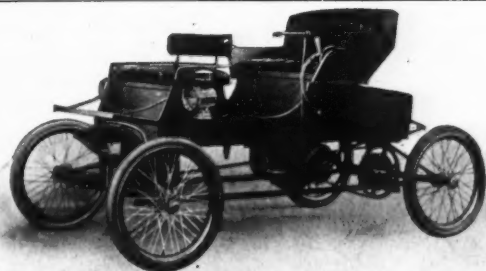
MODELS OF 1903



ORIENT BUCKBOARD.

4 H. P. Speed 30 miles per hour. Weight only
350 lbs. Price, \$500.

The lightest and simplest Automobile in the world.



ORIENT MOTOR CAR.

8 H. P. Speed 30 miles per hour. Weight
1,140 lbs. Price, \$950.

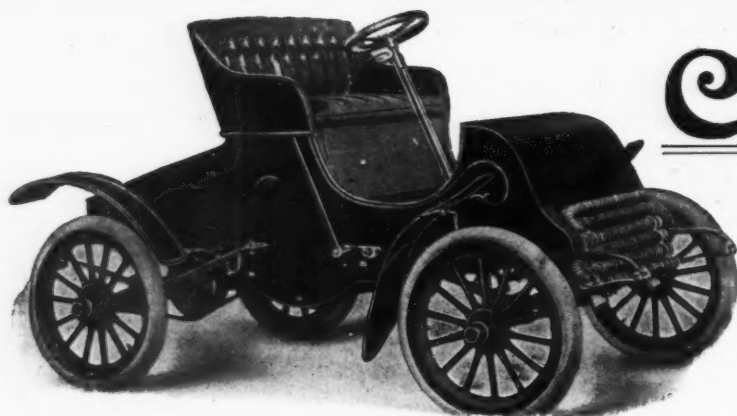
Powerful, practical and durable. Easy to operate.

Now is the Time to Secure the Agency.

Write for Catalogue.

Waltham Manufacturing Co.

WALTHAM, - MASS.



THE CADILLAC

\$750

With Tonneau \$850

The Best Proposition for 1903

THE FOLLOWING AGENCY LIST PROVES IT.

Cadillac Automobile Co. of Illinois, Chicago, Ill.
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Pence Automobile Co., Minneapolis, Minn.
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Theo. Jonas, Milwaukee, Wis.
Adolph A. Giesel, Springfield, Mass.
Birney A. Robinson, Worcester, Mass.
James Lucey, Albany and Troy, N. Y.
Fred A. Mabbett & Co., Rochester, N. Y.
Irvin W. Dill Carriage Works, Harrisburg, Pa.
Brown, Thomson & Co., Hartford, Conn.
Charles E. Whitten, Lynn, Mass.
Murphy Bros., Erie, Pa.
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CADILLAC AUTOMOBILE CO., Detroit, Mich.

William E. Metzger, Sales Manager.

Catalogue for the Asking.

THE AUTOCAR

IT'S A MARVEL!!!!

That is what they all say.....

To cut a long story short, look it over.

Any of the following agents will send
catalogue and even give you a trial spin.



10 H. P. Gasoline Motor.

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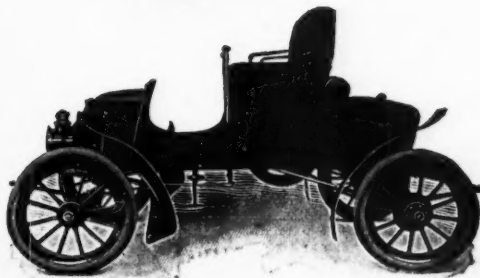
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IT IS IMPOSSIBLE

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to find a more representative list of automobile dealers than this. Most of them clever mechanics, all of them men of discernment, and selling agents for

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TOURING CARS.

A better endorsement would be difficult to obtain. Shall we send you a catalogue describing it?

**We Shall Exhibit at
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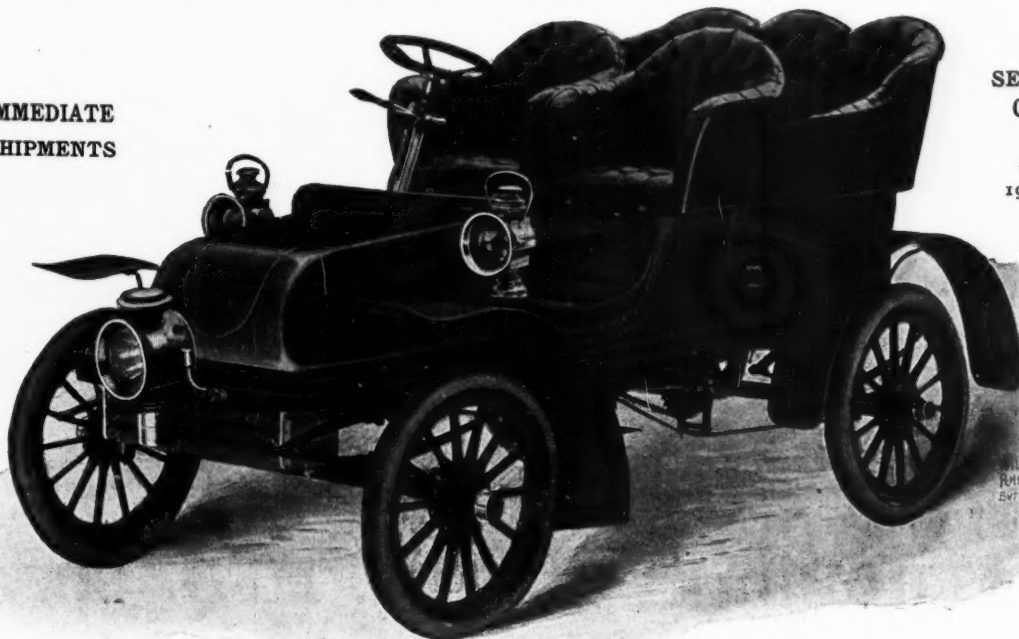
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 W. K. COWAN, Los Angeles, Cal.
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THOMAS B. JEFFERY & CO., = Kenosha, Wis.

THE VOICE OF THE EXPERT

The Show Edition of the New York American published the statement that Henri Fournier, Auto Editor New York American, reported: "The design of the Thomas Tonneau was quite up to the best foreign makes."

IMMEDIATE
SHIPMENTS



SEE US AT
CHICAGO
SHOW
SPACES
19 AND 20

THOMAS TONNEAU—PRICE \$1,250.

E. R. THOMAS MOTOR CO.

1202 NIAGARA STREET,
BUFFALO, N. Y.

THE KENSINGTON



Equipped with a 12 H. P. Motor of double vertical cylinders on front axle, and universal shaft instead of chain. The gauge is standard, and the center of gravity low. The speed ranges from 2½ to 37 miles per hour, and it climbs the steepest hills. It is practical, reliable and beautiful. Touring in the Kensington is a pleasure.

Write for our illustrated catalogue.

The Kensington Automobile Mfg. Co.
425-445 Northumberland Avenue, Buffalo, N. Y.

Studebaker Electric Automobiles

**NO EXPERT
CHAUFFEUR
NEEDED.**

**CAN BE RUN
ANY DAY IN
THE YEAR,
BY ANY
MEMBER OF
THE FAMILY**



WIDE TOURING RADIUS.

A 1908 electric vehicle with a battery which is durable and will give a run of 40 miles on one charge.

A SUCCESSFUL HILL CLIMBER.

Our machines will climb grades which are not only steep but covered with sand and mud.

SMOOTH OPERATION.

Controller has four speeds, allowing an unusual smoothness of operation in starting.

RELIABLE BRAKE CONTROL.

All machines equipped with two brakes.

STRENGTH OF CONSTRUCTION.

Built to be worthy in every point of the Studebaker name and reputation.

Studebaker Electric Automobiles will be exhibited at the Chicago Automobile Show, and can be seen at the following repositories of the

STUDEBAKER BROS. MFG. CO.

Studebaker Bros. Co. of New York, Broadway & 7th Avenue, Corner 48th Street, New York City.
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FIRST-CLASS AGENTS DESIRED
IN TERRITORY NOT ALREADY COVERED.

Factory and General Offices, SOUTH BEND, IND.



**RALPH TEMPLE
& AUSTRIAN CO.**

AGENTS FOR THE
STATE OF ILLINOIS

293 Wabash Avenue,
Chicago.

EVERYBODY admits the desirability of air-cooling—IF. If what?

"If practicable!" That's just it—"if practicable." It is practicable.

After a season's use of the FRANKLIN motor-car with our four cylinder, 10 h. p. air-cooled motor, a customer writes under date of October 13 as follows:

"Before purchasing the FRANKLIN, I had talked with many people who were skeptical about the practicability of the air-cooled motor, but I have found from experience that it is thoroughly practical and reliable."

Another customer wrote under date of September 6 this:

"I have been running the FRANKLIN for about three months and all I can say is that for machines up to 10 h. p. I am perfectly convinced that air cooling is practical. I have four 3 1/4-inch cylinders and use speed of about 1400 revolutions per minute, maximum carriage speed of 30 miles an hour. I have never been troubled with premature explosions or any of the usual troubles due to overheating."

On August 29 another customer wrote:

"I might say I have now covered about 2,700 miles with the FRANKLIN and it has given me perfect satisfaction. The more I run it the better pleased I am with it."

These and other letters of like character are on file in our office. All are from experienced motorists familiar with other cars.

Our air-cooling system brings the motor car right down to the most practical basis. Unnecessary weight and complication is avoided. It is always ready for use. It is simple and is at once the ideal car for practical purposes.

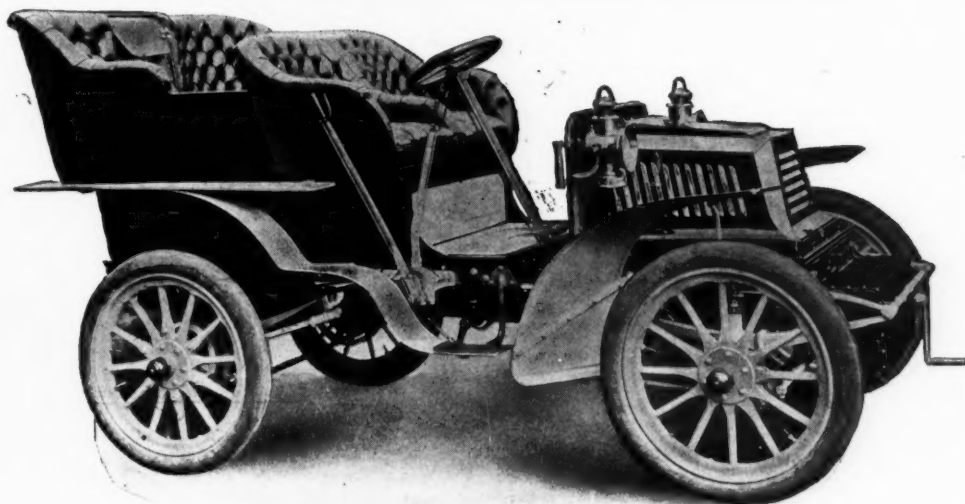
In cold weather it can be left standing anywhere. When run into the barn or station there is nothing to do but leave it. There is no water to draw off, and in use the trouble of water connections, tanks, radiating appliances, pumps, danger of freezing, etc., is entirely avoided.

Our motor is air-cooled without mechanical means. Referring to the subject the Horseless Age in an editorial in reference to the New York-Boston Reliability Contest said of the FRANKLIN:

"Much interest centered in a new embodiment of the air-cooling principle, and a close watch was kept on this machine in the run from Boston to Worcester, which is almost continuously uphill, a condition decidedly unfavorable to air-cooling. The machine ran as regularly as ever on the hills, however, passing practically all others on the steep grades and arriving at Worcester on schedule time."

It appears then there is no further occasion for the "if." But "if" not convinced ask for our complete catalogue, or see the car at the Chicago show. It made a strong hit at New York.

H. H. Franklin Mfg. Co., Syracuse, N. Y.



100 %

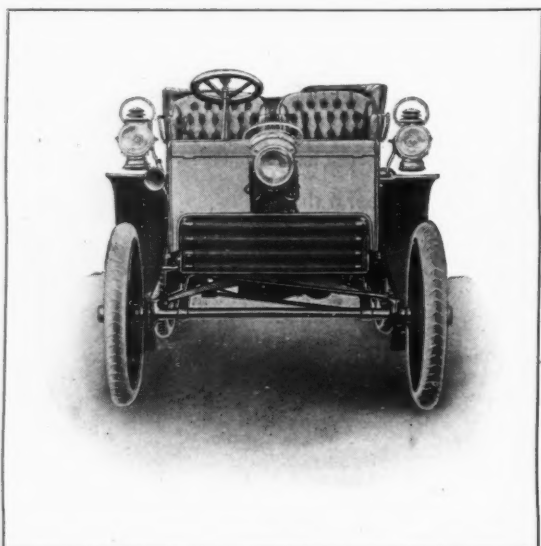
Nine **Searchmonts** were entered in Endurance Contests in 1902, and all made **100%** records. The **New Searchmont** retains all the good

features of the old ones, and has many improvements. It can be seen at the Chicago Automobile Show. Better examine it before purchasing.

Searchmont Automobile Company

PHILADELPHIA, U. S. A.

Githens Bros. Co., 1412 Michigan Avenue, Chicago Agents.



\$2,500

“Packard”

It is impossible to combine all of the good points of every different construction in one whole, and the man who makes such a claim, has more bees than motors in his bonnet. We have built vehicles with single, double and four cylinder motors. Each one has some advantage not possessed by the others. It takes the same quality of mind to make the best adjustment on one of the four cylinders as it does to secure the best results on the single cylinder. In the latter case the operation is complete, which is an advantage, for not only will the fewer parts to look after insure their receiving better attention, but much of the time spent in tuning up and adjusting on the more complicated constructions will, in this case, be used in the pursuit of that real pleasure for which the automobile is intended.

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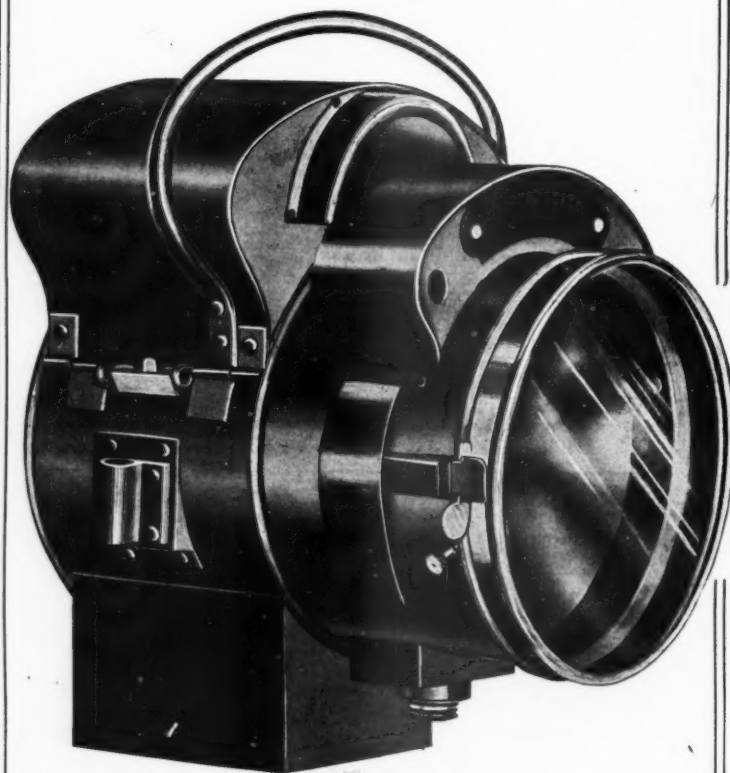
Packard Motor Car Co.

WARREN, OHIO.

NEW YORK: Eastern Department, 317 W. 59th St.
 BOSTON: H. B. Shattuck & Son, 239 Columbus Av.
 PHILADELPHIA: Wm. F. Rudolph, 302 N. Broad St.
 CHICAGO: Pardee & Company, 1404 Michigan Boul.
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Phare Solar No. 1. 1160 Candle Power.

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YOU DON'T HAVE TO PAY MORE THAN \$600
FOR A RELIABLE RIG

...THE NEW...

CRESTMOBILE

Is Such a Rig—Air-Cooled, Can't
Freeze, No Chains, Shaft Drive,
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WE ALSO SELL RIGS AT \$750 AND \$2 000

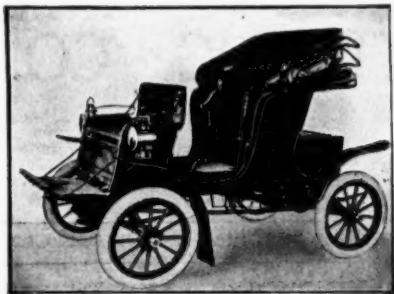
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DON'T FAIL AT THE CHICAGO SHOW TO SEE

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OUR EXHIBIT
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SPACE 86



OUR CAR HAS
SPEED AND
RELIABILITY

It is equipped with a 7 horse-power two cylinder motor of the opposed type. Has 3 speeds and reverse controlled by the same lever. Is water cooled and the most economical to run. Regularly equipped with artillery wheels and detachable tires

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NEARLY EVERY PROMINENT
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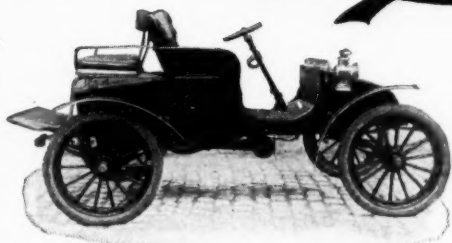
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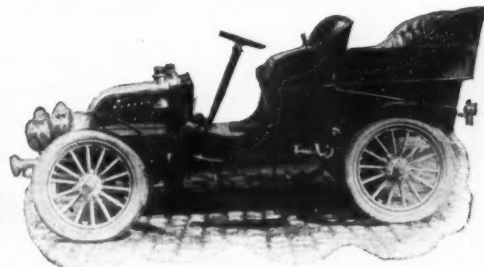
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U.S. Long Distance AUTOMOBILES



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A CAR AS GOOD AS ITS NAME

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...MADE BY...

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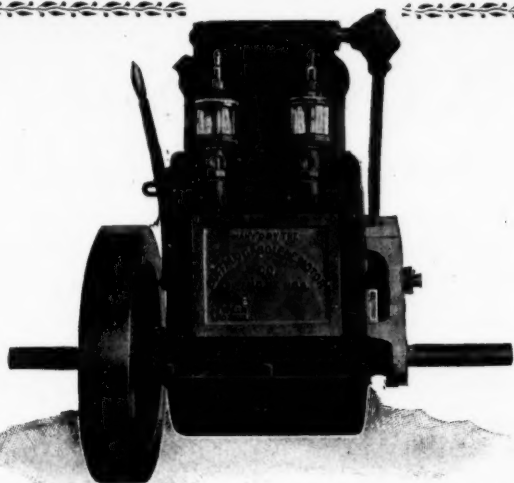
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1902-1903 NATIONAL AUTOMO-
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30 Bradley Street, BUFFALO, N. Y.

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WITH A WORLD WIDE REPUTATION

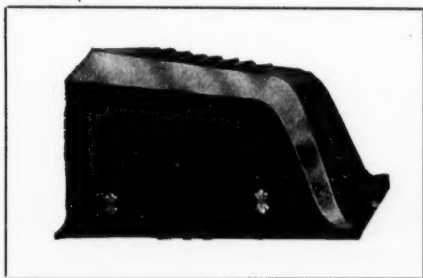
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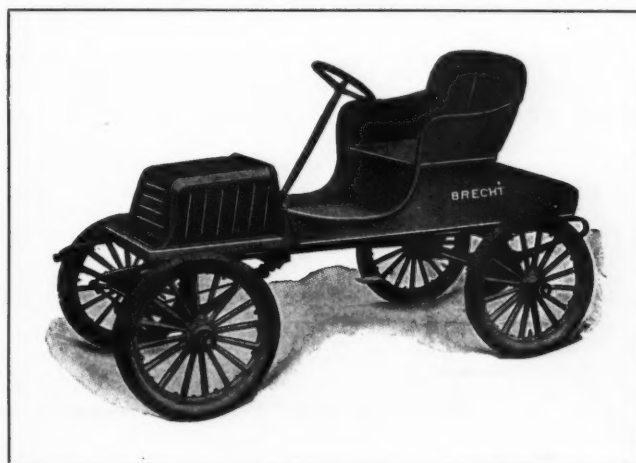
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Artistic in Design.....Constructed on Scientific Principles



BRECHT'S PAT'D RADIUS RODS

KEEPS THE CHAIN IN THE PROPER TENSION

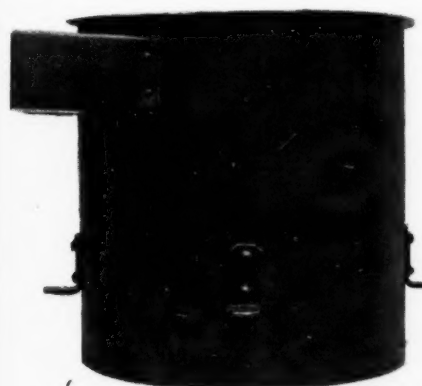
Positive Wheel Steer--Gives No Back Lash
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BRECHT AUTOMOBILE CO.

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See Our Exhibit at the Chicago Show
February 14th to 21st.



"IT" The Flash BOILER

Manufactured by **The Barton Boiler Co.**

Office and Factory, 4112-4230 State St.

CHICAGO, U. S. A.

Long Distance 'Phone, 1540-1541.

Will Exhibit at Chicago Auto Show
..SPACE 159..



How About Your Runabout?

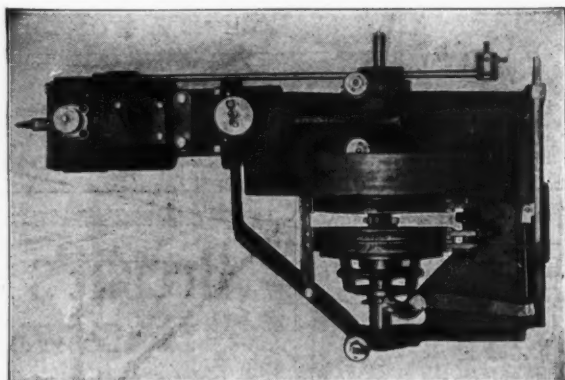
HAVE YOU AN EFFICIENT MOTOR?

We have and are anxious to tell you how you can improve your construction. We advocate their use in 1000-lb. vehicles, but they are doing 20 miles per hour in machines that weigh 1250. Transmission providing two speeds, forward and reverse, fitted to shaft, thus making the motor ready to install in the vehicle.



Come and investigate. It will be time and money well spent.

The prices are in keeping with the quality.



If you are looking for cheap goods, look elsewhere.

We try to and do make the best motor of its class.



We provide engines without transmissions if desired. Also Champion transmissions, differential gears, roller bearing axles, chains, sprockets, artillery wheels, tires, etc. Our new catalogue is now being compiled. Send your name and address for one when ready for mailing.

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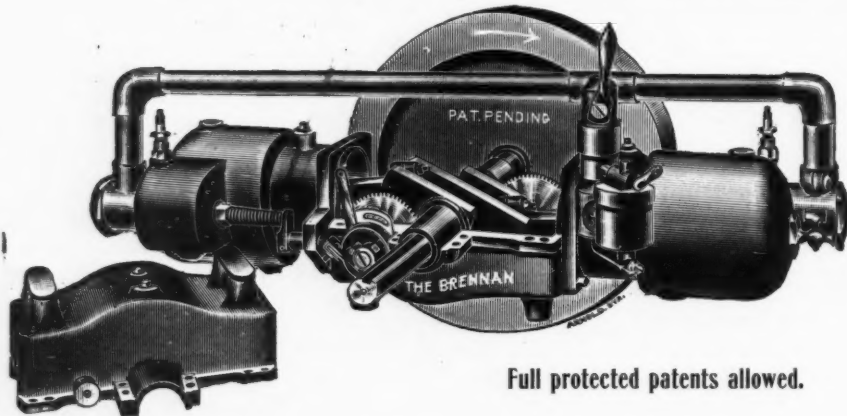
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CHICAGO, U. S. A.

Brennan Standard Motor

This is the Motor, that was purchased by buyers from all parts of the United States, at the New York Show



Full protected patents allowed.

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Brennan Motor Co., Syracuse, N. Y.

Dear Sir:—After carefully considering various makes of motors, at the show, we have decided on your motor. Enclosed, please find check for sample order on 8 H. P. motor with accessories. Ship, without delay.

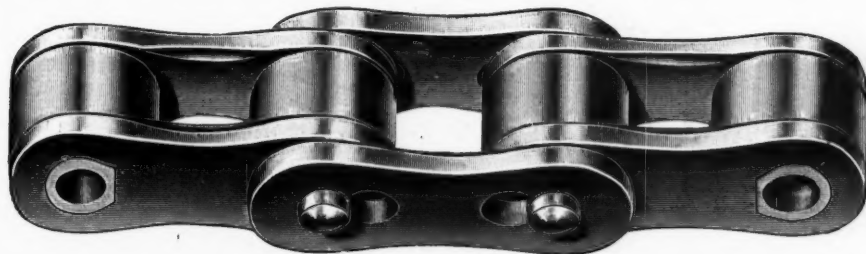
Yours truly,

We will see you at the Chicago Show, Space 135.

BRENNAN MOTOR CO., Syracuse, N. Y.

BALDWIN AUTOMOBILE CHAINS

For motor carriages have been used more than any other make. They are the Standard. They are made in two patterns, Detachable and Riveted. Baldwin chains have a reputation for high-grade quality of material and workmanship.



We Offer the Trade a Good **MUFFLER** AT A LOW PRICE. Write for Quotations.

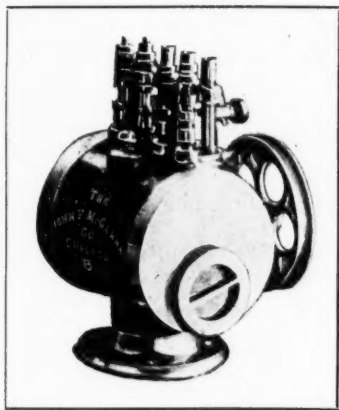
THE BALDWIN CHAIN and MFG. COMPANY,

K. FRANKLIN PETERSON, Sales Agt. for Middle States,
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WORCESTER, MASS.

Show Space, No. 146

Mechanical "Force-Feed" Oiling Machines



With use of these machines no thought or care whatever is required touching lubrication. When the Automobile starts the oiling begins automatically at every point about the machine requiring oil. The action is continuous in ratio with the speed of the machine and stops when the Automobile stops.

The quantity of oil required at each point is pre-determined from practice and when once set for the determined quantity, the action thereafter is entirely automatic. All oil cups, "squirt cans," "splash" cases and other "traps and calamities" may be joyfully thrown away.

That oil economy is secured by these machines over any other method of Lubrication is a well known fact and reduced friction will add further savings in fuel and repairs and thus entirely pay for the equipment in short order.

Write for Catalogue and Estimates.

Will Exhibit at the Chicago Automobile Show, Space 163.

Parties desiring disinterested information regarding merit, please write us and we will place them in correspondence with manufacturers in their line of business using these machines.

JOHN F. McCANNA CO., Members National Association of Automobile Manufacturers, 244-246 Wells St., CHICAGO

KELLY BURNERS
Make Things Hot

The 1903 Burner

KELLY BURNERS
Never Back Fire

has been tested on many rigs and NOT ONE has come back.

THERE IS THE



Kelly Burner.

That tube is continuous, of steel. The tube below connects with each coil, giving an even distribution of gas.



That casting has no gauge or holes in the bottom.

Air is taken at ends, preventing under-lapping of flame.

No back-firing even if burner is red hot.

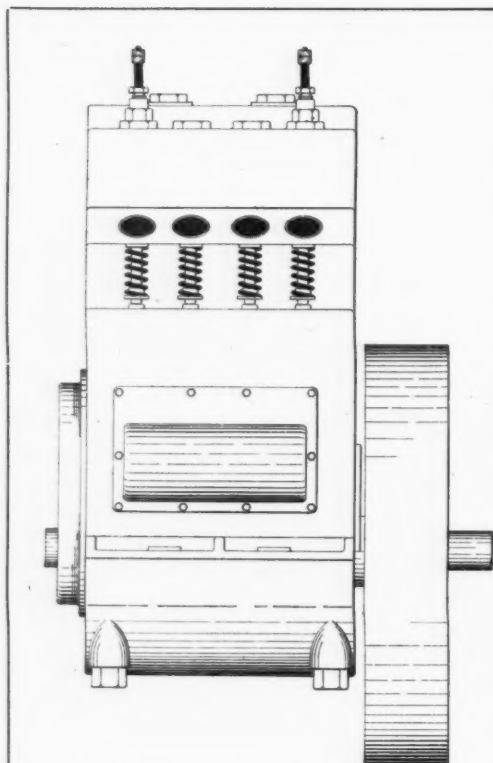
The generator is clean, quick, simple, strong. No smoke or flaring. No drip cup needed. Encased in aluminum. Wintry blasts have no evil effect. ❄ ❄ ❄ ❄ A great and scientific combination.

THE KELLY HANDLE BAR CO.

KELLY BURNERS
Give Satisfaction

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KELLY BURNERS
In All Sizes.



8 B. H. P. Gasoline Motor.

Things We Can Do For You

We make a specialty of gasoline motors for the trade.

Can you afford to use an inferior motor, when we can

Furnish you with a first-class one for the same price.

You will be surprised if you get our catalog and see our prices.

MOTORS IN TWO SIZES, TWO
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AND 16 B. H. P. RESPECTIVELY

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OSHKOSH, WISCONSIN.

"The Wheel That's True."

Our Guarantee Our Eulogist

When you stop to think that the year guarantee given with our wheels is the only such guarantee given automobile wheels—that alone should start you thinking hard about

MIDGLEY TUBULAR STEEL WHEELS

The Midgley Wheel honors and beautifies any automobile they are fitted to—just as a beautiful bride does to more or less worthless man. See that your automobile is married to Midgley Wheels . . .

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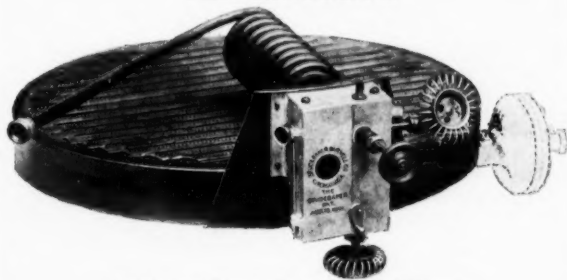
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Works and Operates as Easy as Gasoline. No Danger.

Three Minutes to start. No smoke or smell.

FOR KEROSENE.



Studebaker Generator and Burnell Burner.

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ALSO

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ORDERS BOOKED at
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BLOWING OUT
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The Reputation and Success of Our Goods for
Three Seasons Should Appeal to Both Manufacturer and Rider.

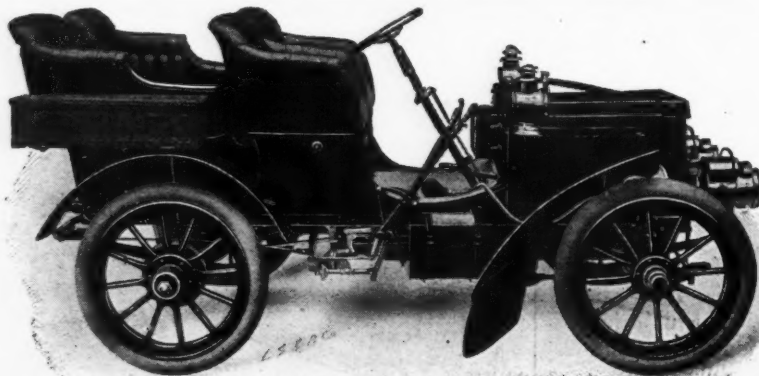
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FOR GASOLINE.



This cut shows Burner Casting.
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One year ahead of them all, 16 h. p. Motors mounted on front. Slide gears. Universal shaft, bevel gear transmission. Governed Motor, foot control. Catalog tells the rest, mailed on request.

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SOLUTION

**Making Electric
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**Substituting Acid
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Sealed Metal Cells.
No Lead.
No Bother with Filling.
No Rubber Cells to Break or Leak.

Charge or discharge at **any rate terminals will carry** - without harm to batteries.
Voltage practically constant. Light weight; reasonable in cost. Address

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Good Literature

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Two
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Sample
Free.



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It covers all branches of
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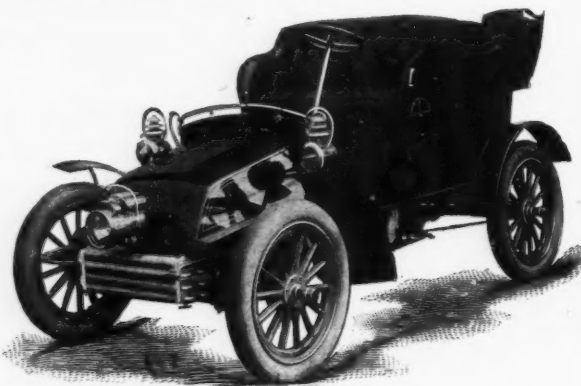
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High grade illustrations.

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NO VARIATIONS



SIMPLICITY
STRENGTH
ELEGANCE IN
DESIGN
THOROUGHNESS IN
WORKMANSHIP

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QUILLING BROTHERS, Cleveland, O.
JAMES LUCEY, Troy, N. Y.
HYSLOP BROTHERS, Toronto, Ontario.

N. W. CHURCH, Los Angeles, Cal.

THE KIRK MFG. CO., Toledo, O.

THE SANDUSKY

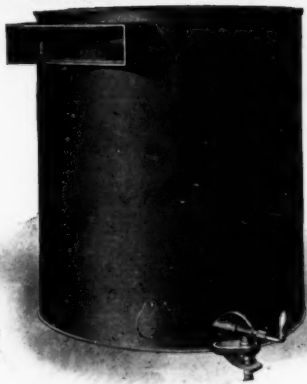
The Business Man's Friend

Always Ready To Go

A Neat, Light Runabout built for American roads. Mud, Sand and Hills shrink before it. A Model of Simplicity, Quiet, Safe, Powerful and Economical. The Carriage we build has been on the Road for Three Years, and therefore is no experiment. We are now prepared to put them on the market, and respectfully invite your correspondence.

The Sandusky Automobile Co.

SANDUSKY, OHIO, U. S. A.



Boiler Complete, Ready for Installation.

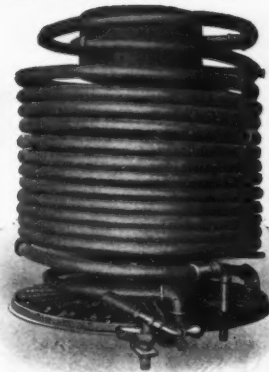
Do not let them say that they have a Boiler
just as good, but insist on having a

Salamandrine **NEVER BURN OUT..** Boiler

in your new carriage, or have one installed in your
present carriage, and it will give 50 per cent more
pleasure and efficiency than your present boiler

A good many users of our boilers are run-
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Our Boiler will be exhibited by P. J. Dasey
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SALAMANDRINE BOILER CO., 220 Broadway, New York
WORKS: NEWARK, N. J.



Boiler Showing Burner and Connections

Infringement Notice



The Upton Machine Company announces that it is
the owner of U. S. Letters Patent as follows:

649,026, dated May 8, 1900.
686,786, dated Nov. 19, 1901.
687,172, dated Nov. 19, 1901.
687,173, dated Nov. 19, 1901.
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691,508, dated Jan. 21, 1902.

And has other patents pending. These patents relate
to gearing and other Automobile Appliances.

Notice is hereby given that **infringers will be
prosecuted** to the full extent of the law.

Upton Machine Co.
Beverly, Mass.

The Moore Independent Automobile Pump

*We never miss the Pump
Till the Boiler runs dry.*



Class 0-1

THE above cut represents the Single Pump Boiler Feeder,
single-acting plunger type.

Steam end is tapped in three places for steam, one place
for drip; plug can be changed to any of three places, or drip
can be taken from any not used for steam. Steam end can
be located in *any horizontal position*.

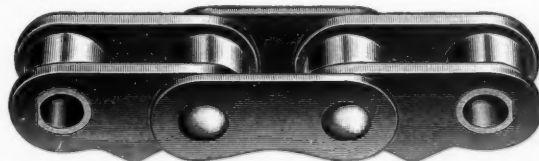
Water end must be located so delivery shall be vertical as
relates to the valves. Exhaust can be taken out at any angle.

Manufactured by the

"Union" Steam Pump Company

BATTLE CREEK, MICHIGAN

**Accuracy &
Durability**



**Fine Pro-
portions**

INVESTIGATE "WHITNEY" CHAINS AT THE CHICAGO AUTOMOBILE SHOW.

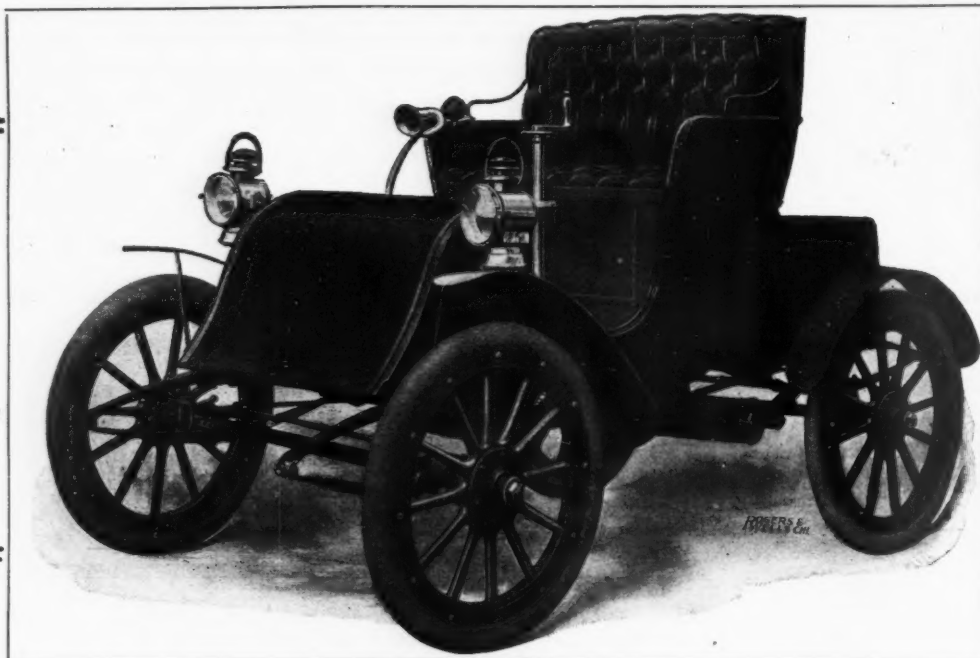
"WHITNEY" STANDARDS for Dimensions of Roller Chains Will Soon Be the American Standards if The Con-
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THE WHITNEY MFG. CO., Hartford, Conn.

TRANSMISSION TROUBLES SOLVED THE UNION

\$1,200

Combination
Two and Four
Passenger



\$1,200

Simple and
Strong
Construction

AN INTERESTING PROPOSITION TO DESIRABLE AGENTS

SEE US AT
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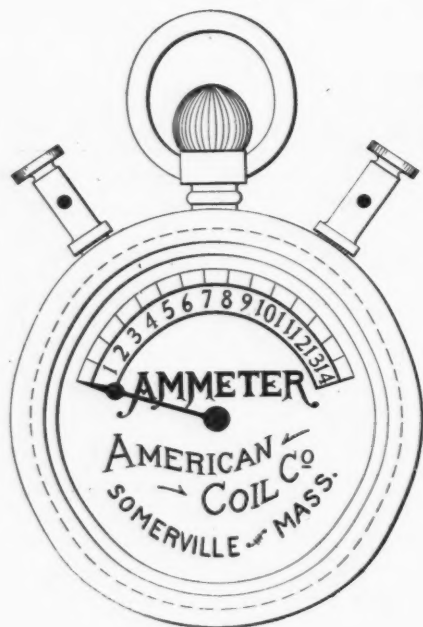
UNION AUTO CO., Union City, Md.

DON'T

Place Your Order



For Ignition Apparatus

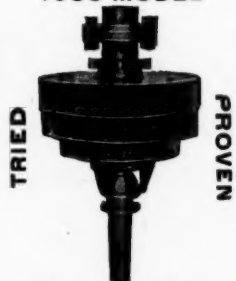


Until you have seen our NEW AUTOMATIC COIL, which changes from a vibrator to a plain coil automatically. New Little Wonder Dynamo with starting battery in base. New Covered Spark Plug which prevents water or oil from short-circuiting the plug on outside. New Pocket Ammeter which gives the output of batteries correctly and our whole line of A YEAR IN ADVANCE Jump Spark Ignition Apparatus.

American Coil Co., Somerville, Mass.

The Champion Transmission

1903 MODEL



Patented March 4, 1902

Two Speeds Forward and One Reverse, Made in Three Sizes.

No. 1—	3 to 5 brake horse power, price	\$65.00
" 2—	5 to 10 " " " "	75.00
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We also make special gears for direct drive and marine uses. If you wish to eliminate all your transmission troubles get the **CHAMPION**. Not Cheapest, but Best.

Liberal discount to the trade.

New catalogue ready about the 20th.

THE CHAMPION MFG. CO.
479 Hancock Street, BROOKLYN, N. Y.

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 Co., Cleveland.



No. 1.

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B=B JACKS

Manufactured by

Bray Manufacturing Co.

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(TRADE MARK)

Known to the trade as the

BEASLEY ELASTIC TIRE



Built on the truss principle, it's strong and the strain is
 equally distributed.

Ample resilient yet defies destruction or disabling by
 puncture.

Can be used until completely worn out.

Standard Anti-Friction No. 50
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THOR

and complete set of ma-
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 assembling, guaranteed
 by responsible makers.

Write us. General Salesmen

BRANDENBURG BROS.
& ALLIGER,

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PATENTS PENDING

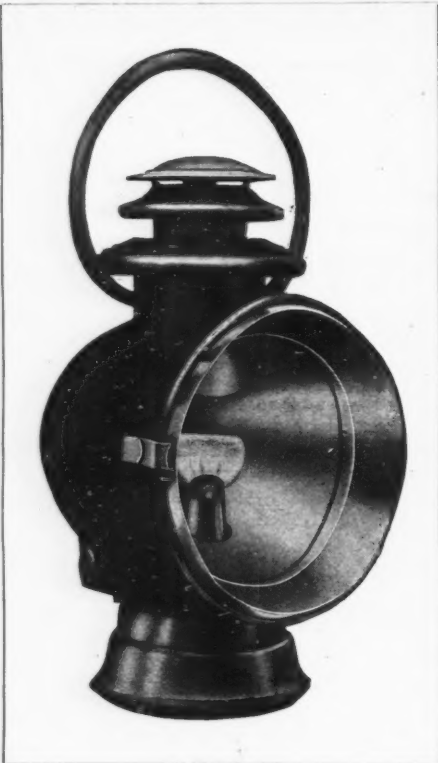
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Cycle driven by a chain
 direct. Highest speeds,
 greatest power, simplest
 to operate.

New Catalogue Just Out.

We will Exhibit at
Chicago Show.

Aurora
Automatic
Machinery Co.
 AURORA, ILL.



IT WAS THE LAMP
SUCCESS OF THE
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ATWOOD "STAY-LIT" LAMP

Outclasses Them All

Why Use a Backnumber or Experiment,
Either Are Unsatisfactory....

THE "STAY-LIT" has earned its high reputation and is the best and swellest Automobile Lamp on the Market. The large number of contracts taken indicates that the trade knows a good thing.

ATWOOD MFG. CO., Makers,

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Tail Lamp.

Waverley

ELECTRIC VEHICLES



Model No. 21
ROAD WAGON. Price \$850
Weight 1000 lbs.

Built for Business
or Pleasure.....

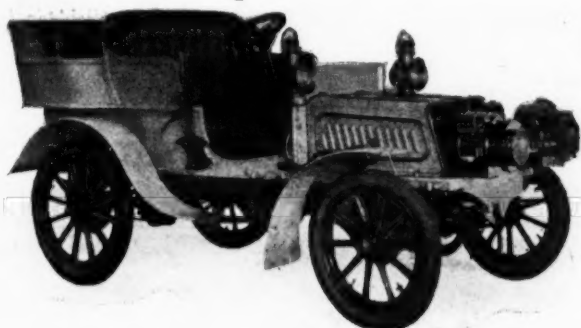


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1903 Models Just Off
the Press

INTERNATIONAL MOTOR CAR CO., WEAVERLEY FACTORY Indianapolis, Ind.

DECAUVILLE

MOTOR CARS

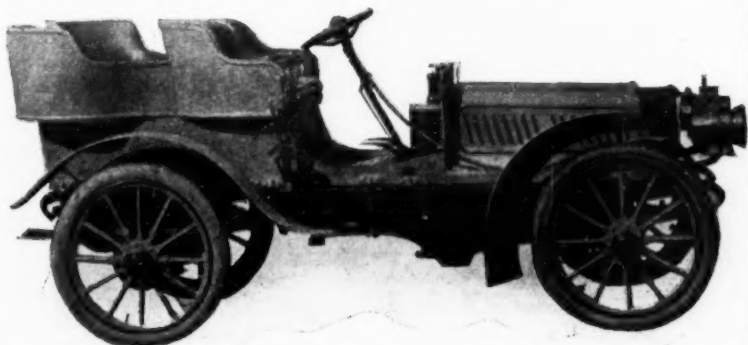


10 H. P. Decauville. Price, \$3,250.

High power for weight is one of the many attractive features, and insures great speed and hill-climbing ability.

**THE ONLY AUTOMOBILE
THAT EVER TRAVELED
1,000 MILES WITHOUT A STOP.**
(Official Record, November, 19 0.)

A car with a reputation - not an untried proposition.
Built more strongly than any American car and
therefore better for American roads.



20 H. P. Decauville. Price, \$5,500.

We can make Prompt Deliveries if Orders are Placed Early.

We are open to place a few good Agencies,
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SEND FOR EIGHT GREAT DECAUVILLE ACHIEVEMENTS.

Standard Automobile Co.

Sole United States Agent

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Telephone, 476 38th St.

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**METEOR..
STEAMERS**

**READING..
STEAMERS**

**SUPERIOR FINISH, STRONG,
RELIABLE AND SPEEDY**

DEALERS:—

Before placing your contracts for 1903, investigate the merits of "Meteor" and "Reading" Steam Tonneaus and Runabouts.



OFFICE AND FACTORY

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Results
Have
Demonstrated
That the

WESTERN BATTERY

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It is conceded that there was nothing exhibited in Madison Square Garden Automobile Show that approached it for beauty of design or quality.

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Automobiles Today



Franklin

4 Cylinders, Air Cooled. SEND TO US FOR IT.

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Toledo, Waverley, Long Distance, Panhard, Franklin, General, Rambler.

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A Combination Acetylene and Candle Lamp

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WILL BE READY FOR DELIVERY IN MARCH

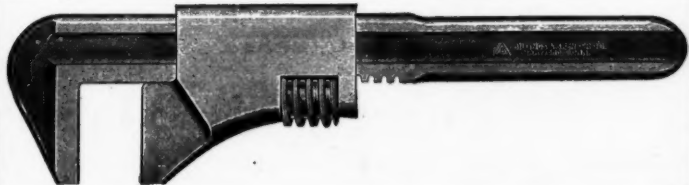


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The B. & S. Automobile Wrench

Is Necessary to the Complete Equipment of the Motor Vehicle.....See Circular A.

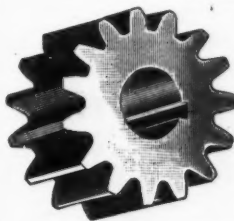


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MAKERS OF DROP FORGINGS OF EVERY DESCRIPTION.

Gears for Automobiles

Spur Gears, Bevel Gears, Spiral Gears, Worms and Worm Gears, Internal Gears.



Internal Gears require only 3-16 inch space between Gear and Web.

If you want perfect Gears send them to us. Estimates cheerfully furnished on receipt of specifications.

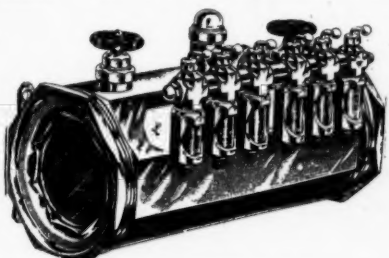
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complete your 1903 equipment without including a **Lubricating System**, automatic, economical and reliable.

Up-to-Date
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Explosive
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SIMPLEX
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Automatic
Sight
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AUTOMATIC LUBRICATOR CO.

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HOFFMAN MOTOR CAR

\$800 Equal to any \$2,500 Automobile made **\$950**



7-horse power gasoline engine, the simplest, most easily controlled, and most reliable machine on the market. A combination single seat or double seat, for two or four persons. Can be changed in fifteen seconds.

Fills all Requirements
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See our Exhibit at
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Manufacturers of

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10 H. P. Combination 2 and 4 Passenger Car.
20 H. P. Touring Car.
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All Built for Service.

Look for Our Exhibit at the Chicago Show.

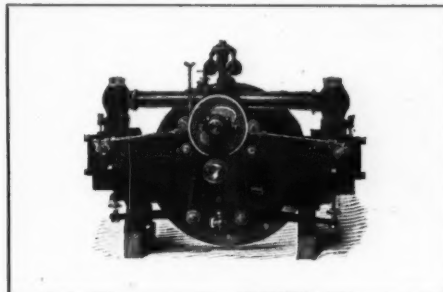
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The Westerfield Motor



Double cylinder, directly opposed.

Perfectly balanced.

Practically no vibration

Spark shifted automatically by speed of engine.

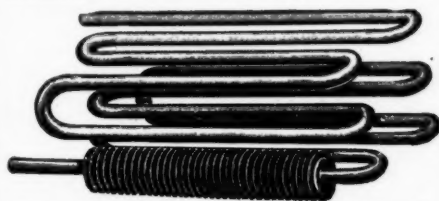
Throttling of the explosive mixture.

Made in two sizes, 6 and 12 H. P.

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Briscoe Radiators, Tanks and Mufflers,



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The Briscoe Continuous Coil Tube Radiator is the Recognized Standard. Made up with or without Discs. Any size, kind or number of tubes.

This cut shows discs upon only one tube. We generally fill entire radiator.

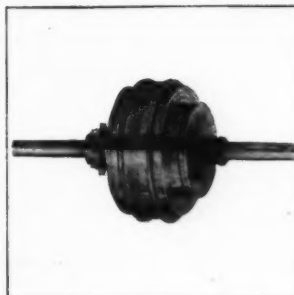
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Has all the latest improvements; 2 speeds orward and reverse. One set of gears and a friction clutch with an emergency brake band. All can be attached to one lever made in 3 sizes.

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American Gasoline Motor Co.

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Patent Pending.

WE can give you all kinds of reasons why you should use

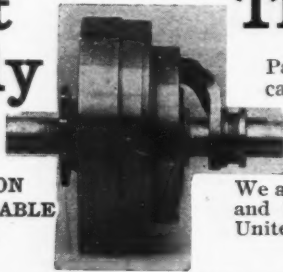
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Try them and you will be able to assure yourself that "THEY ARE THE BEST."

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CHAMPION
CHANGEABLE
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This But Every Other

Part of an Automobile we make or keep in stock. We can supply you with any part or all parts of any machine, either for repair work or to complete a machine of your own, or the complete parts of one of our machines for you to assemble.

We are Manufacturers and Jobbers of Automobile Parts, and have the largest and most complete stock in the United States, at factory prices.

MOST COMPLETE CATALOG.

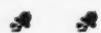
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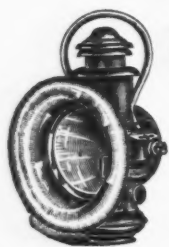


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Faith in one's own product is one of the secrets of success in marketing. We have unqualified faith in THE WOODWARD BURNER. :: It has a record of Fifteen Miles on One Gallon of Gasoline. :: Its construction is scientific. Its top plate is flexible and Tubes screw in bottom plate, and if for any cause Tubes have to be removed all that is necessary is a wrench. It makes no carbon. It cannot backfire—absolutely impossible. It makes steam so that even on hills you have enough and to spare. Its flame is blue and twelve inches long, which means that it gives more heat than other burners. It is durable—will last as long as any other part of the vehicle. We guarantee this. :: For proof of any and all claims here made we refer to the boiler itself. :: It will prove them to your satisfaction if you will give it a trial.

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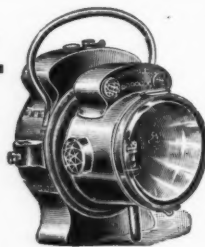
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BICYCLE, DRIVING, BOAT, and

AUTOMOBILE HEAD-LIGHTS

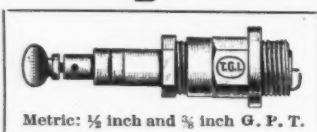
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20th CENTURY MFG. CO., 17 Warren St., N. Y.



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YOU WANT IT.



Metric: 1/4 inch and 3/8 inch G. P. T.

The T. G. I. Spark Plug is not "Soot-proof," nor Unbreakable, but is used in preference to others in thousands of Automobiles in this country, because it gives the most uniformly satisfactory results. Immediate deliveries in any quantities.

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Our Double Cylinder,
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\$150.00

Or Castings and Blue
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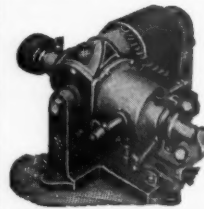
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Office, 30 West Randolph St., - CHICAGO, ILL.

To Owners of Gasoline Engines, Automobiles, Launches, Etc.

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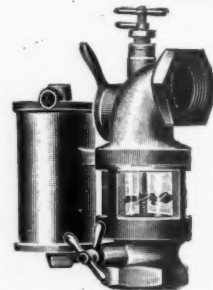
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does away entirely with all starting and running batteries, their annoyance and expense. No belt—no switch—no batteries. Can be attached to any engine now using batteries. Fully guaranteed; write for descriptive catalog.

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THE MOSLER
SIGHT FEED GASIFIER
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The perfect Carburetor,
Sprayer and Mixer.

Automatic Regulation.

Constant Mixture for all
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Gives Complete Satisfaction.

Sole Manufacture
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Room 511, 305 Broadway,
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Special Circular Giving

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The Mobile Company of America
Fifty-fourth St. and Broadway, New York.

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ARE THE
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Dear Sirs:—Your NON-STOP plug is exceedingly practical. It is the BEST I know of,—self cleaning and very efficient."
—J. HENRY MITCHELL, Consulting Engineer Daimler Mfg. Co.
Six Months' Guarantee! "Spark-Book" mailed free.
KING ENGINE CO., Maywood, N. J.

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FOR DAILY USE

A CUP WINNER



WEIGHT 1450 LBS., ALL ON. PRICE, \$1250

WE ARE ONE OF THE SEVENTEEN

We might have sold our output at New York, but reserved a good portion for Western buyers. Better see us and get posted.

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THE FREDONIA MANUFACTURING CO.
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The Scenic Line Chicago to New York

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GEO. A. CULLEN,
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Dining Car Service a la Carte

Club Meals 35 cents to \$1.00

Through Vestibuled Sleeping Cars

Modern Equipment

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For Subscription Department
of MOTOR AGE, in Indiana,
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to good men. Others need
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FACTORY FOR SALE



Ready for immediate use
Complete with line shaft-
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POWER, electric light
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tracks, and offices

Ten Acres of Land

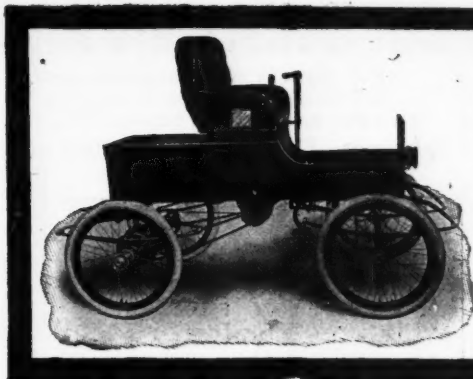
Ten minutes' walk from
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a city composed largely
of the best class of satis-
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Suitable for iron and
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AUTOMOBILES

Five trunk railroads. A
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Is the recognized standard for
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Loss in manufacture will be
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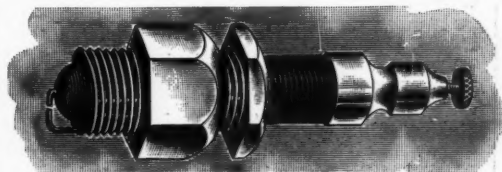
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Are the Standard of the World.

35,000 in Use.

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THE NEW DOW SPARK PLUG



Is the Best by Every Test. Send for Catalogue.

DOW PORTABLE ELECTRIC CO.

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THE FEATURE of the Accessory Exhibits at the New York Automobile Show was easily the

VEEDER TACHOMETER

It is placed on the dash directly in front of the driver and indicates at all times in plain figures the rate of speed per hour at which you are traveling. IT IS SIMPLE, DURABLE AND ACCURATE. Special attaching fixtures are necessary for different makes of automobiles and it requires time to make them. Better send for a descriptive circular and place your order promptly. Numerous orders have already been booked and all will be filled in their turn.

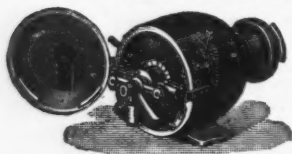
THE VEEDER MFG. CO., HARTFORD, CONN.

Makers of Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

THERE IS THE
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RUNABOUT
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BEFORE YOU
COME TO ANY FI-
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BOUT BUYING AN
AUTOMOBILE.
THE CENTAUR
IS ALWAYS READY
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GOES. NOTHING
ABOUT IT YOU
NEED TO BOTHER
WITH. NO NOISE,
NO DANGER FROM
HIGH EXPLOSIVES,
NOTHING ABOUT A
CENTAUR BUT
PLEASURE AND
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\$ 850.00
IT IS THE BEST
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CENTAUR MOTOR
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APPLE ECONOMICAL GAS ENGINE IGNITERS

DYNAMOS, MAGNETOS, BATTERIES, TIMERS,
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Complete line
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Dayton, Ohio, U. S. A.

The 1903 Model Automatic Carbureter



If you have a gasoline engine that troubles you, or a gas engine that you wish to convert into a gasoline engine, you need this Carbureter, the only reliable system for automobile or bicycle motors. Will stand any amount of vibration, is noiseless, light; no valves in motion when once adjusted to an engine; never needs to be shut off or changed.

Patents Pending.

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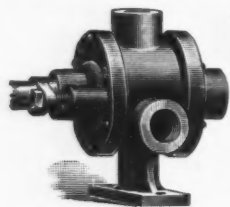
FOR ANY STYLE OF MOTOR VEHICLE

Lighter, Stronger and More Durable
Than any other Guard on the market

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Improve your circulation by using the



LOBEE PUMP

Increases and gives a positive circulation to the cooling water for all Gasoline Motors. Simple, Cheap, Durable, Efficient, easy to apply. Over 2,000 in use.

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Lobee Pump & Machinery Co.

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Motor Equipment

Applicable to Any Motor Bicycle

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WINTER FACILITIES

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During the Winter at Chicago
Automobile Club Garage, at
Reasonable Rates. :: :: ::

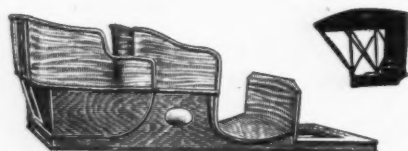
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Details cheerfully supplied by

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Phone, Wabash 762.

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Our Boilers are Right

For Quality, Workmanship and
Efficiency. They are Unequaled.
Our Boiler Holds the World's Record.
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are Mechanically Correct, Accurately Ground,
Nearest Dust Proof.

LIGHTEST. Used by Manufacturers in
High Grade Wheels. Ridden by the best
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BOUGIE HERZ SPARK

....PLUG
will never carbonize; will spark just as
well in oil; no points to break; no mica to
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Guaranteed for 6 Months. Money
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Catalogue of auto supplies mailed free.
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FINE Upton transmissions, largest size, leather
mud guards, radiators, axles, wood wheels,
32 and 34-inch, single tube tires, 30 and 34-inch;
magnetos, engine cylinders, 4 and 6-inch; two 2
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This material was purchased at a bargain and
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Toledos and Oldsmobiles, second-handed, cheap.
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SECOND-HAND AUTOMOBILES — Toledos,
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WANTED—More igniter troubles. We fix them
with our improved Sta-Rite spark plug and
Sparksee. Detroit Motor Works, Detroit, Mich. tf

FOR SALE—The Murray gasoline runabout; the
strongest and most powerful light runabout
on the market; price \$650; no trouble to demon-
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runabout of well known make. A fine second-
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300 miles, and practically new, for \$500. Other
bargains in gasoline and steam machines from \$150
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TWO COLUMBIA WAGONETTES, MARK XI,
with two extra sets of batteries, all in fine
condition and splendid working order. Originally
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AUTOMOBILES MADE, repaired and remod-
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Wall & Benson, 268 Oak St., near Clark, Chicago.

CAPITAL WANTED—For manufacturing hydro-
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Address N, care Motor Age.

FOR SALE—1902 Oldsmobile with full leather
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WILL sell 1902 Winton Touring Car, perfect
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stable room for this year's model. Howard Alex-
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WANTED—Small second-hand gasoline Ton-
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ABOUT \$5,000 will buy an established, good
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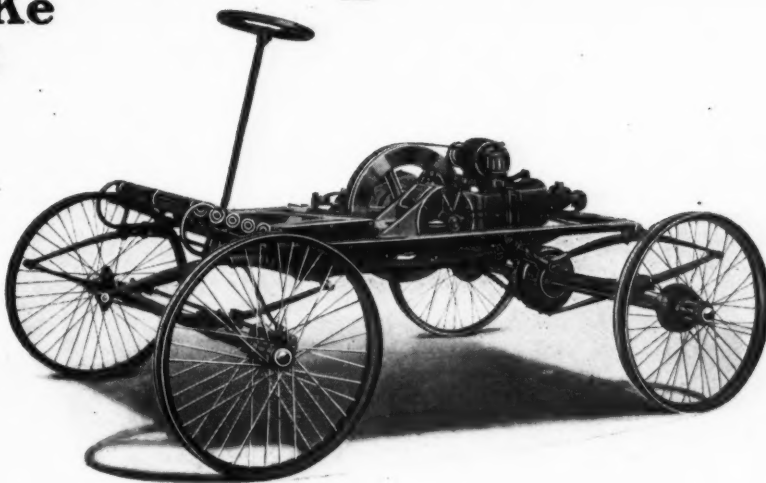
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